OCTOBER 1955

products finishing

FINISHES ON METAL PRODUCTS

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SILVER . . . the sign of gracious living and fine tradition.

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8	21	34	47	60	73	86	99
9	22	35	48	61	74	87	100
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FREE

For more information about how Oakite Rustripper eliminates operations in paint shops and plating shops, send for one or both of the illustrated booklets listed in the coupon.

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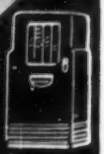

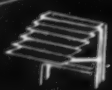

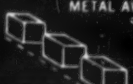

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touch up your products anytime, anywhere... factory-perfect job every time!

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In use by industrial leaders in every field, the Sprayon Self-Spraying Touch Up Tool ends your touch up problems. Protect the eye-appeal of your product—get an extra bonus of customer satisfaction—and do it with big savings in time, cost and equipment investment! Sprayon goes right to your source for your own touch up finish, custom-loads the Tools for you under your own label. Exclusive Sprayon features mean even unskilled help do a factory-match job in minutes...for pennies. Use it anywhere—from your own production line to the final customer. Nothing else to buy—it's a disposable low-cost constant-pressure spray gun—a complete paint shop in a can!

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For more data circle 106 on Reader Service Card

Typical plant Ruff-L-Buff after wearing off about one inch in testing operations and then trimming. Loose threads, broken material and numerous small holes due to excessive heat and abrasion of the cloth are apparent.

30% LONGER BUFF LIFE

The Binderized Ruff-L-Buff shown here was subjected to the identical test undergone by the untreated buff — yet look at the difference! Notice the absence of thread or cloth breakage of any kind, proof of Binderizing's effect on buff life.

with New H-VW-M Binderized* Ruff-L-Buffs®

Not just "another type of buff", but a revolutionary new H-VW-M process which impregnates the entire Ruff-L-Buff with the same organic binder used in buffing compounds. From these new "Binderized" Ruff-L-Buffs come a host of practical, cost-cutting advantages, proved over many months in actual production line operations.

Item by item, these are the six major advantages of the H-VW-M Binderized Ruff-L-Buff.

- **Longer buff life** — damage from overheating eliminated by pre-lubrication of buffing material, preventing excess frictional heat caused by constant flexing. This additional buff life has averaged 30% in actual test runs.
- **Better compound adherence** — the binderizing impregnation creates an affinity between buff and compound. The compound does the cutting, not the buff.
- **Faster cutting action** — more compound is retained on the buff, insuring an even cut for a longer period without re-application of compound.
- **Extended composition life** — additional binder in the cloth ensures better abrasive adhesion, longer life of both composition and buff.
- **Heading-up time** — new wheels require only application of the compound to be ready for immediate operation.
- **Cooler running** — in addition to pre-lubrication, six holes in the center and twelve air channels in the center rim provide a forced air circulation over all cloth surfaces.**

And, of course, Binderized Ruff-L-Buff retain such important features as *bias-cut cloth* to prevent unravelling, *perfect buff balance* for uniform rotation and wear, and *exclusive Red-E-To-Use face* that takes compound without need for surface preparation.

H-VW-M bias-cut Sisalweav buffing wheels are also available in Binderized types.

* Patent Pending
** Patent No. 2,140,208

For complete information on H-VW-M Binderized Ruff-L-Buffs and other specialized buffs write for Bulletin No. B-102.

PLATEMANSHIP

Your H-VW-M combination — of the most modern testing and development laboratory — of over 80 years experience in every phase of plating and polishing — of a complete equipment, process and supply line for every need.

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means better paint for industry

To guarantee exact duplication of color, a sample of each batch is checked against your required color standard under controlled light conditions. Sunrise and high noon light conditions can be produced by the lamp shown above, day or night. Further checks on color employ an electronic color difference meter.

Developing *the right paint for your product or plant* is only the first step in the complete Lowe Brothers Technical Service.

Highly skilled technicians also perfect production techniques and supervise their control to guarantee that every mix of your formula is exactly the same and meets your rigid specifications.

To control this production the very best testing equipment, such as the standard-light condition unit shown here, are utilized at every step during manufacture. As many as 89 separate production tests are standard for some paints.

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Products Finishing

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October, 1955

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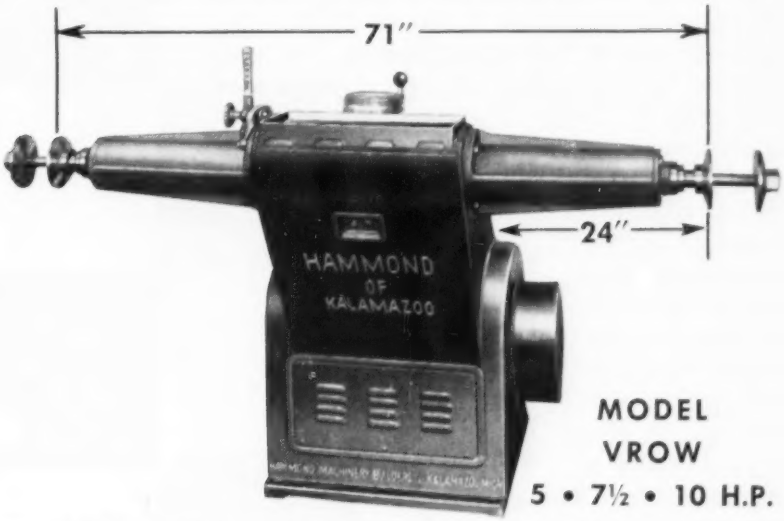

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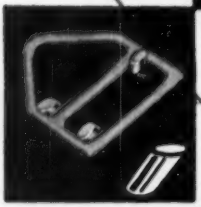
Good Barrel Finishing Costs Less with The Abbott Method



It's a fact! The Abbott Method of Barrel Finishing reduces costs because it features long-lived Abbott Burnishing Shapes. Made of selected carbon steel — deep hardened — tempered and polished to a mirror-like glass hard finish, Abbott Shapes make efficient contact on all sizes and designs of stampings and castings. Abbott Burnishing Shapes last longer, burnish more parts and cost less in the long run. Used in Abbott Vertical Barrels they make an unbeatable barrel finishing combination!

For Proven Performance . . . use The ABBOTT METHOD.

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Can you use Nacromer? Can your product benefit from a distinctive, different kind of finish? Use the handy coupon below to obtain a demonstration sample of a Nacromer finish on the type of material your product resembles. Mail it today.

* Nacromer is not suitable for use in pigmented enamels, high temperature bake-type synthetic resins containing formaldehyde, or paints. It is suitable for use over these coatings in a clear enamel or lacquer.

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Seymour "NC" and "CK" Bright Nickel processes in a warm plating bath permits specification barrel nickel plating to any desired deposit from .0002" to .0010" at speeds four to six times faster than a cold solution.

Seymour Barrel Nickel Brightener solutions are also available for cold plating baths where decorative deposits of about .0001" maximum are required.

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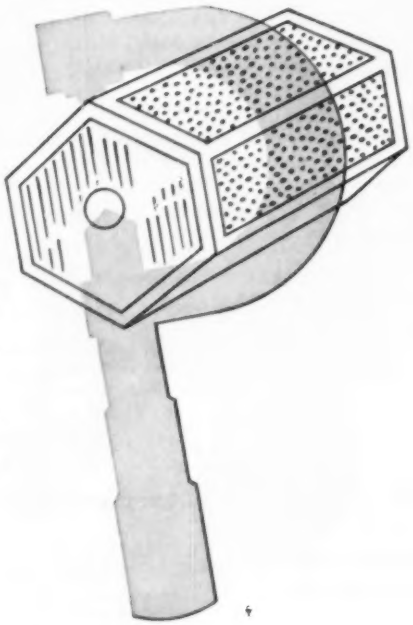

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from 370 to over 600 square feet per gallon with

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Ransburg maintains complete laboratory facilities for test-painting YOUR products under simulated production conditions. Why not let us show you what Ransburg Electrostatic Processes can do for you in YOUR finishing department. No obligation.

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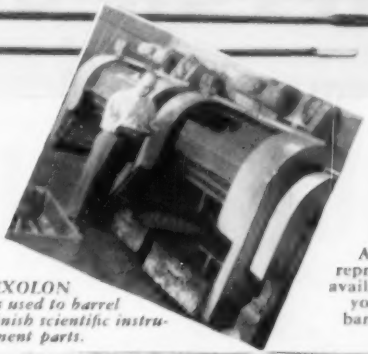
Today, scientific research has developed equipment and abrasives for better barrel finishing. Such an abrasive is EXOLON, an electrically fused aluminum oxide, resistant to fracture and extremely hard. EXOLON is pretumbled to produce rugged shapes that stand up longer in operation. Results are always the same — batch after batch when operated in formulated finishing cycles.

Precision parts shown above were barrel finished with EXOLON to a predetermined stock removal and surface finish. Whether castings, stampings or machined parts, there is an EXOLON abrasive to meet your finishing needs.

Write for folder and recommendations!



EXOLON is used to barrel finish scientific instrument parts.

An EXOLON representative is available to help you with your barrel finishing problems.

EXOLON Tumbling Abrasive is carefully graded in sizes from 2½ inches down to fine powders.

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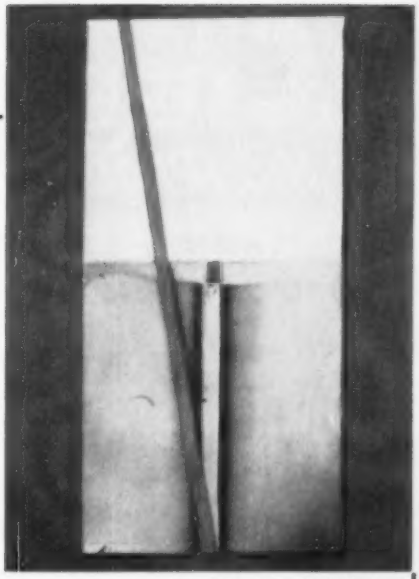
SINCE 1890

Quality Finishes

FOR THE PLATING INDUSTRY



Actual Unretouched Photo

QUALITY THAT SPEAKS FOR ITSELF—The upper half of the above silver plate was finished with Nikolas 2105 Clear Lacquer; the lower half with competitive recommended clear silver lacquer. A rubber band was placed over the two finishes and in two weeks the free sulfur had penetrated the competitive material with the above results.

The same results can be expected when testing No. 2105 Clear Lacquer for Hardness, Mar-resistance and Discoloration from direct sunlight.

The finest plated goods are protected by Nikolas Clear Finishes.

Eye Appeal Sells Your Product!

Why jeopardize your reputation with inferior finishes when the finest cost no more?

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RECOMMENDATIONS and QUOTATIONS

• *We will be pleased to receive blue prints or preferably finished and unfinished samples of the part you contemplate finishing together with detailed information on present finishing operation and production requirements. On receipt of samples and data we will offer recommendations and quotations.*

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DESPATCH

Engineered

FINISHING SYSTEMS

Space does not permit us to show or even list the hundreds of satisfied users of DESPATCH Engineered Finishing Systems who have proved their dependability with increased production and improved quality, however, the four shown are typical examples.

DESPATCH FINISHING SYSTEMS are designed and built to finish your product better, faster and more economically. They are engineered to fit your particular requirements. You can get a complete system or individual units, such as—

• BAKING OVENS • SPRAY BOOTHS • WASHERS
• DRYOFF OVENS • FLOW COATERS • CONVEYORS
• AIR MAKEUP SYSTEMS

Resident engineers located in your vicinity are ready to help you with your finishing problems.

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Bunting Glider Co., Ardmore, Pa., metal furniture makers, gets 4 times the production, no operating cost increases with this DESPATCH Conveyorized Washer and Dryoff Oven.

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Case Steel Products Corp., Chicago, washes, paints, finish-bakes airplane landing mats on a stepped-up schedule with this DESPATCH Finishing System.

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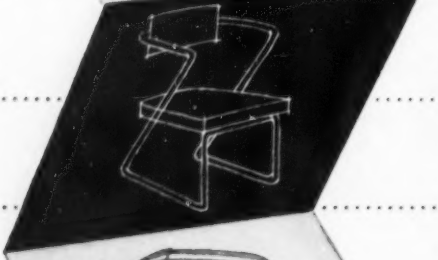

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. . . cast tin anodes . . sodium stannate . . . stannous sulfate . . . tin fluoborate . . . acid tin addition agent.

zinc plating

. . . ball and cast zinc anodes . . . sodium and zinc cyanide . . . zinc sulfate . . . zinc fluoborate.

lead plating

. . . cast lead anodes . . . lead fluoborate.

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. . . silver cyanide.

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Chicago 10, Ill. • Cincinnati 13, Ohio • Detroit 28, Mich.
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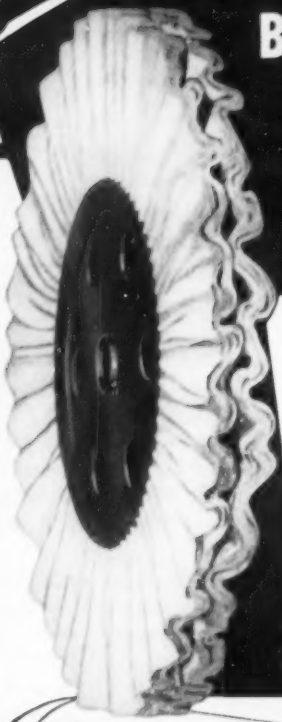

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Vol. 20, No. 1
October, 1955

. . . . . editorial . . . .

Fumes Can Be Controlled

The dedication of each new air conditioned plant (one was described in the August issue of PRODUCTS FINISHING beginning on page 52) serves to dramatize the fact that most dust, fumes, and other waste products that originate from finishing processes, can now be removed within the plant or destroyed at the point of exhaust to the outside air.

This change from the old days of acid, alkali, and chrome fumes, dusty polishing rooms, solvent-laden paint rooms, and paint-laden, or otherwise contaminated plant exhaust air, has not taken place "overnight," but rather represents the cumulative development of the past 20 years.

Economic considerations in the design and operation of air conditioned plants dictate that a minimum of plant air be exhausted to the outside. Hence, it is desirable that exhaust air from plating tanks, polishing machines, paint dipping and spraying operations, be cleaned and returned to the working area. The air to be exhausted must be reduced in volume, and freed from solid material and fumes.

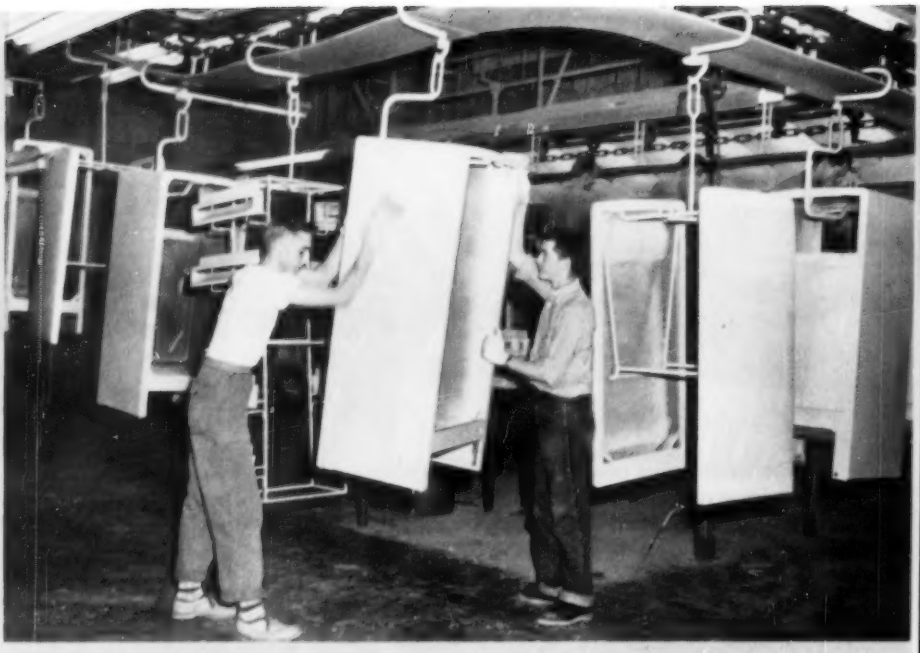
Chemical and mechanical products to prevent or reduce solution droplets in exhaust air, and air scrubbers to remove solution droplets from plating tank exhaust air have been developed. Air cleaners and filters to remove various dusts are in use. Water wash spray booths were developed some years ago to remove paint particles from exhaust air and make the paint available for reprocessing. Filters for dry type booths catch the paint particles on throw-away type filter sections and thus clean the exhaust air. Much more recently have been developed units which burn the paint solvent fumes so that air exhausted from the plant will carry no paint particles and have no odor. Further, part of the heat generated by the destruction of the paint fumes can be used for drying or baking, or for plant heating.

The position and prestige of the Finishing Industry has been greatly enhanced by the improved working conditions and public relations resulting from the adoption of these devices. The many companies responsible for such developments (as important, perhaps, as the developments in automation) are to be congratulated for their contribution to industry progress.

They justly deserve their present place in the sun.

Ezra A. Blount

—EDITOR



Refrigerator Finishing

"Progress is our most important product." That's General Electric's slogan. For evidence of it, look to Appliance Park, a new plant in Louisville, Kentucky, where refrigerators are being finished in a well integrated, continuous process, using the latest techniques in cleaning, priming, painting, baking, and materials handling.

By GERARD H. POLL, JR.

"AUTOMATION" of the sort that is becoming more and more prevalent in the American home, the kind that is well on the way to making that part of the famous quotation which says ". . . woman's work is never done," only a memory, is personified in the products of a huge plant on the outskirts of Louisville, Kentucky. Appliance Park, General Electric Company's recently built plant

★ ★ ★

(Right) Reinforcing of the electrostatically applied finish coat on the tops and inside flanges of the refrigerators is accomplished by hand spraying in this water wash spray booth. ➔

← Cabinets are given a thorough tack rag cleaning prior to application of the finish coat. Note the shield between the C-type conveyor hooks, which protects the cabinets from any foreign matter which might fall off the conveyor track onto freshly applied paint.

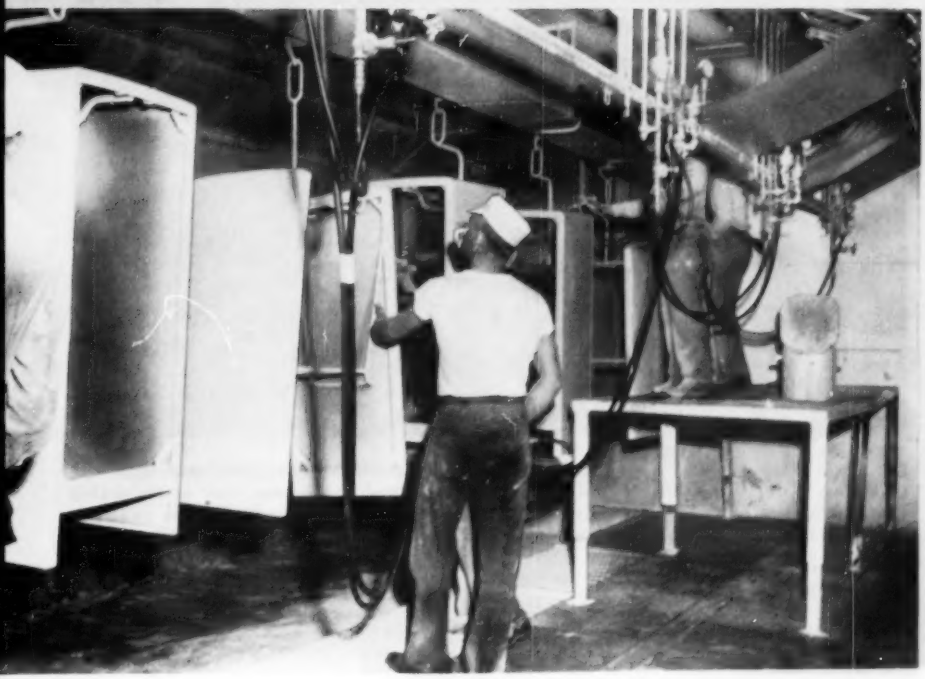
★ ★ ★

which produces home appliances, is an impressive sight.

Two attractive structures of contemporary architecture greet the visitor entering Appliance Park. One is the visitor's reception building; the other is used to display General Electric products. Some conception of the size of this plant can be found in the fact that it is three-fourths of a mile from one end of the row of five manufacturing buildings to the other. Each of the first three Major Appliance Division plants houses a complete manufacturing unit for specific appliances: washers and dryers are made in the first, ranges in the second, dishwashers and disposals in the third; and buildings Four and Five are devoted to making refrigerators. Refrigeration units, made in building Four, are transported to building Five by a conveyor; here the refrigerator cabinet is fabricated and finished, and the whole unit is assembled.

Modern conveyorized systems and finishing equipment are used in finishing refrigerator cabinets at Appliance Park. Great care has been

at Appliance Park



taken to install manufacturing facilities which will produce a high quality finish economically. Exhaustive testing of materials and methods used in finishing, prior to acceptance for production, is standard practice. To ensure that each product used will be satisfactory from a production standpoint, and will help to produce a finish that will meet General Electric standards for quality, each material must pass laboratory tests, such as salt spray tests, sunlight and exposure tests. Limited trial production runs follow, and if satisfactory performance is demonstrated in these runs, a larger run is made, and products from this run are released in limited quantity for field testing. This consists of trial for a year, or possibly more, in actual use. Only after all these hurdles have been passed is a material given the green light for full production use.

Overhead chain conveyors are used to transport cabinets throughout the cycle of finishing operations. C-type hooks are attached to the chains, and standard hangers are used to hold the articles being processed. Three main types of hangers are used, one each for the doors, cabinets, and inner door panels of the refrigerators. For other articles

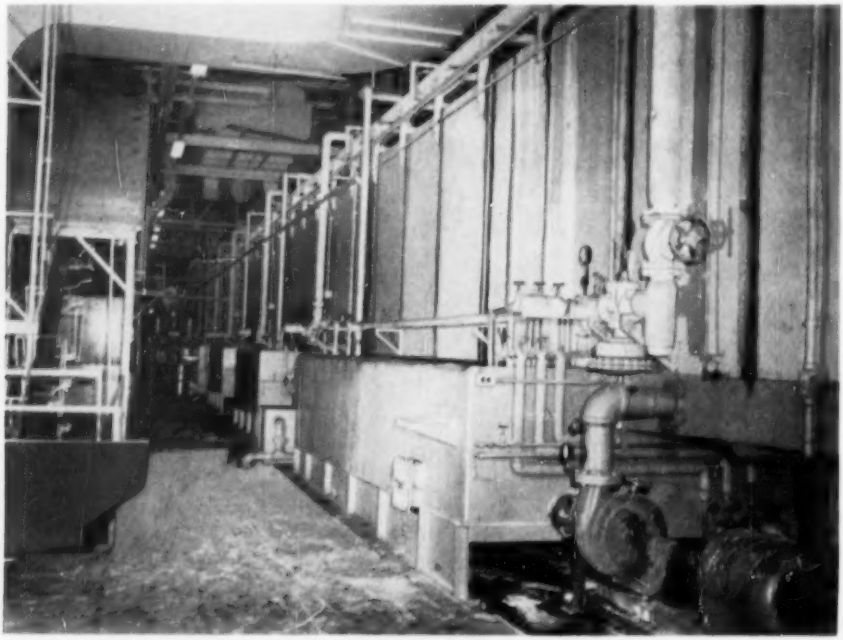


Fig. 1—A view of one Mahon automatic cleaning and phosphatizing installation. Cleaning is performed in the section of the tunnel in the foreground. Rinsing, phosphatizing, and chromic-phosphoric acid rinse sections follow in sequence. Part of the drying oven used to dry parts leaving the phosphatizing section can be seen (left foreground).

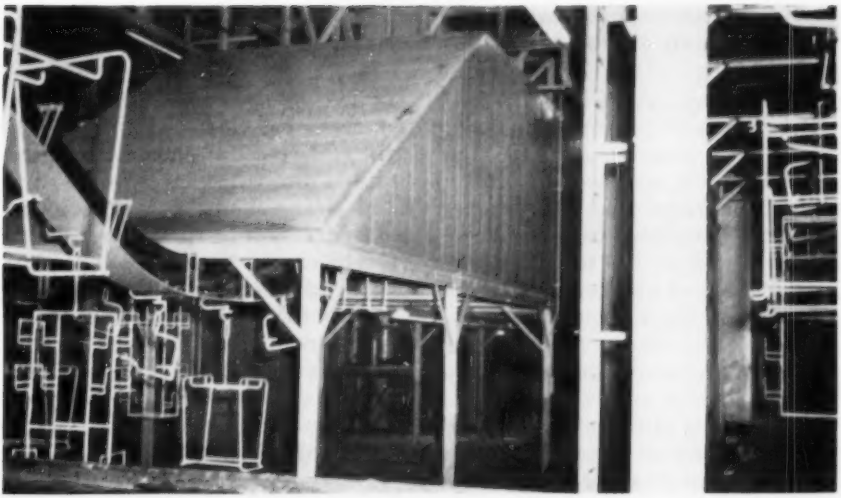


Fig. 2—Two conveyor lines from the phosphatizing section feed into a large A-type oven.

processed in smaller volume, special hangers are used.

The finishing installation is constructed on two levels; metal finishing, priming and spray finishing are performed on the first floor. Cleaning, phosphatizing, drying, and baking and final inspection facilities are located on the second level. The ceiling is 43 feet high, allowing ample head room for both levels. Cabinets arriving from the drawing and forming section of the plant are given a final smoothing with abrasive disc polishers before being transferred to the two finishing conveyors. The finishing conveyors transport parts to the second floor, where a Mahon cleaning and phosphatizing installation is used to prepare the base metal for priming and spray painting.

Each conveyor, moving at 25 feet per minute, carries the cabinets through one of two identical completely enclosed cleaning and phosphatizing lines (Fig. 1), in a sequence as outlined below:

1) Clean in a solution of soda ash and Santomerse wetting agent, held at 180 deg. F.
2) Hot water rinse, 170 deg. F.
3) Hot water rinse, 170 deg. F.
4) Phosphatize in a solution of Bonderite 1000 held at 165 deg. F.
5) Rinse in Parcolene chromic-phosphoric acid solution.

The processes used in the steps above clean the metal, etch it slightly, and form insoluble complex phosphate compounds on the surface of the metal, which give good adhesion, and thus form a good paint base. They also guard against corrosion.

The length of the cleaning section is 19 feet; the two water rinses are

"—the centrifuge forces the phosphatizing solution through a drill cloth lining."

each 10½ feet long; the phosphatizing section is 19 feet long; the water rinse and chromic-phosphoric acid areas following are each 10½ feet in length. Stainless steel construction is used throughout the phosphatizing area, and on the tops of the remaining tunnel sections in this machine. Steel sheet floors are used in the phosphatizing area, and flanges at the edges ensure that accidental solution leakage is held to this area.

Continuous filtration of the phosphatizing solution is performed by a Tolhurst centrifuge, through which the solution is constantly recirculated. Spinning at 750 r.p.m., the centrifuge forces the phosphatizing solution through a removable drill cloth lining. Thus, solids precipitated by the phosphatizing process are caught on the surface of this filter, which is removed periodically to clean out the solids. Using this system, General Electric finds it necessary to clean out the phosphatizing system completely only about once a year. Thus the phosphatizing section has two circulation systems, one through the nozzles, the other

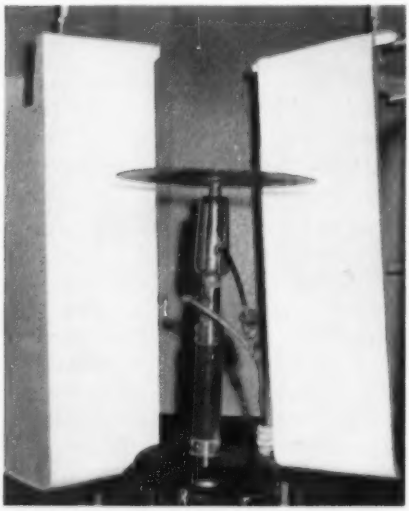


Fig. 3—A view of the Ransburg No. 2 Process reciprocating disc sprayer in operation. Reciprocator has a 70-inch stroke and makes 8 to 10 cycles per minute. All components at high voltage are at least 18 inches from grounded objects with the exception of those being sprayed. (Photo courtesy Ransburg Electro-Coating Corp., Indianapolis 7, Indiana.)

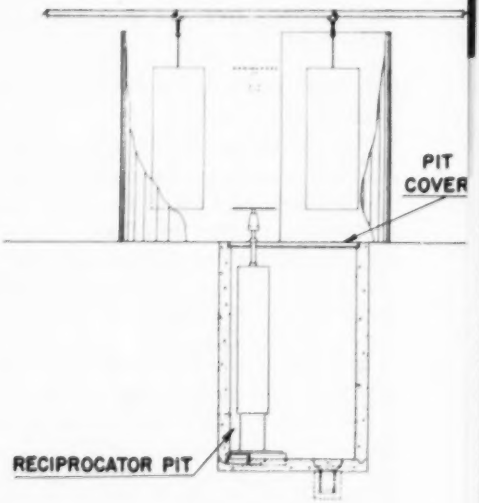


Fig. 4—Diagram showing the travel of the reciprocator used in electrostatic spraying. Hydraulically operated cylinder carries the sprayer in and out of the pit, allowing it to travel the length of the cabinets or other articles being sprayed each time a unit passes the reciprocator. (Illustration courtesy Ransburg Electro-Coating Corp., Indianapolis, Ind.)

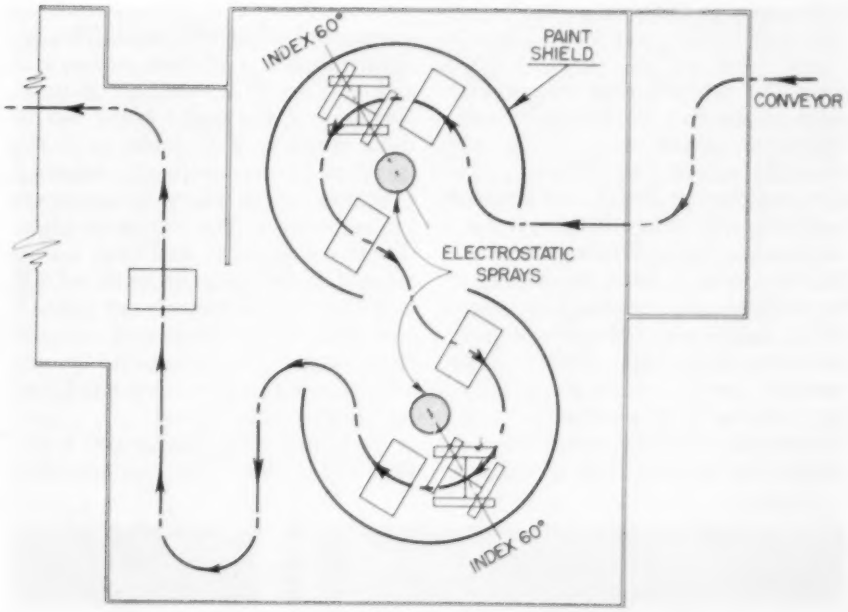


Fig. 5—Diagram of conveyor path through the two spray booths used for electrostatic spraying of cabinets and doors. There are a total of 4 such installations, two each on the primer and finish spray lines. Auxiliary pumps are used for smaller volume spraying of colored parts; white paint is supplied from the central supply room under pressure.

through the solution centrifuge.

Leaving the phosphatizing sections, both conveyors feed into an "A" type oven (Fig. 2), which is steam fired, and is controlled at a temperature of 350 deg. F. This stage of the process ensures that the phosphatized surface is absolutely dry prior to the application of primer.

Cabinets leaving the oven are ready to move back down to the first floor and to a series of spray booths and ovens for priming and paint finishing. This part of the system was designed and installed by George Koch Sons, Inc., in cooperation with General Electric Co. engineers.

Two complete identical priming and painting lines are installed on the first level. The conveyor first takes the units into a water wash spray booth, where a protective coating of Pittsburgh Plate Glass Company Suydam black baking Japan is sprayed on the underside of the cabinets.

Units then move into an electrostatic spray booth, where primer is applied. Two complete Ransburg No. 2 Process electrostatic spray systems are installed herein, each of which sprays two sides of the cabinet. Thus it is not necessary that the cabinets rotate on the conveyor,

since the cabinets pass on opposite sides of the two electrostatic units. The electrostatic spray units are mounted on the top of large cylinders, which are raised and lowered hydraulically (Figs. 3 and 4) in a continuous cycle, moving the rotating disc up and down the length of the cabinet as it passes. The length of the stroke raises the disc slightly above the top of the cabinet on the upward stroke, and slightly below the bottom of the cabinet on the downward stroke. Electrostatic units are flat disc reciprocating type sprayers, rotating at 900 r.p.m., and using a potential of 90,000 volts. The recipricator has a 70 inch stroke, and makes 8 to 10 cycles per minute. Pressure of the paint being fed to these sprayers is variable, as is the speed of the hydraulically operated cylinders which carry the sprayers up and down. The pressure under which the paint is delivered is calculated to deliver paint at about 400 to 500 cubic centimeters per minute. Filtered air is circulated rapidly through the electrostatic booths (Fig. 5), keeping the solvent fumes and dust at a safe level.

The electrostatic equipment is sufficiently versatile to accommodate

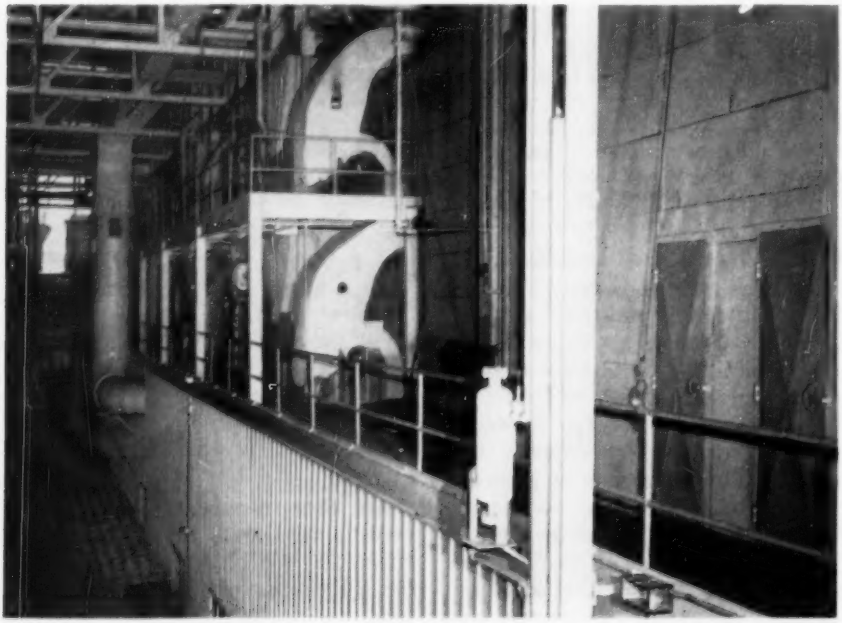


Fig. 6—Overall view of the electrically heated baking oven located on the second level. The space below is used for painting and allied operations. Electrically heated air circulating units are mounted on oven wall. Refrigerator cabinets are baked at 285 deg. F.

all of the sizes of cabinets and doors being processed. When a fixed size is being run for any substantial length of time, a push button control and adjustment of the fluid delivery sets the length of the stroke and the fluid delivery rate to the optimum point for that particular size.

Reinforcing of the prime coat on the top and inside flanges of the cabinet is accomplished by hand spraying in a water wash spray booth through which the cabinets pass, prior to entering the Koch baking oven.

This oven is heated by electric elements enclosed in an external chamber. It is steam pre-heated and has high velocity forced air convection recirculation of the heated air. Automatic controls are used to hold the temperature at 385 deg. F. Articles being processed move the length of the oven several times, so as to make possible a 30 minute baking time.

Upon leaving this oven, three minutes are allowed for cooling after which the conveyor carries the cabinets past operators who sand out the prime defects on cabinets, and then remove the residue with compressed air and tack rags (article heading). **Cabinets are now ready** for the finish coat. Du Pont Dulux is used as the final gloss white coating. The finish coating system includes an electrostatic setup, using two units, and a hand spray touch-up for the top, edges and inside flanges (article heading). Sprayed cabinets are baked in an electrically heated oven at 285 deg. F. for 30 minutes (Fig. 6).

White paint and primers for all the spray booths are supplied from a central point where the paint is mixed, and kept in large tanks. Storage facilities are ample, and thus paint is delivered to the plant in tank trucks. Solvents for thinning the paint are pumped into the mixing room from a "tank farm" outside the building. Auxiliary tanks located near the spray booth area are used for spraying cabinets in pastel colors, and for experimental runs.

Air in the plant is kept clean and fumes are kept at a low level by an efficient ventilation system, which keeps the spray area under pressure, and by filtering the makeup air. The process for accomplishing this is divided into three steps: (1) air is preheated to 40 deg. F.; (2) air is sent

Fig. 7—Delpark filter, which is used to remove paint solids from spray booth water. Water wash spray booth is in the background.

through a water wash and an air filter; and (3) air is re-heated to 80 deg. F. Desirable results from this system are manifold: more pleasant working conditions; less possibility of air-borne dust damaging freshly applied paint; and elimination of process variables, such as temperature and humidity.

Three types of spray booth coatings are used in different areas of the spray booths, the type used depending upon the conditions being encountered in each particular area. Strippable plastic, alkali type, and wet coatings are used to ensure that overspray can be stripped from the spray booth walls easily.

Delpark filters (Fig. 7) are used to filter the deactivated paint from the water used in water wash spray booths. Like most of the other processes used in this plant, this system for removing overspray from the spray booth air and filtering the deactivated paint from the water curtain used to accomplish this, is automatic in operation. Water used in **the water curtain** of the spray booth falls into a trough, and is recirculated by a pump. On a time cycle basis, the water which has been filtered is pumped back into the spray booth trough in sufficient quantity to raise the level of this water and cause it to overflow. This

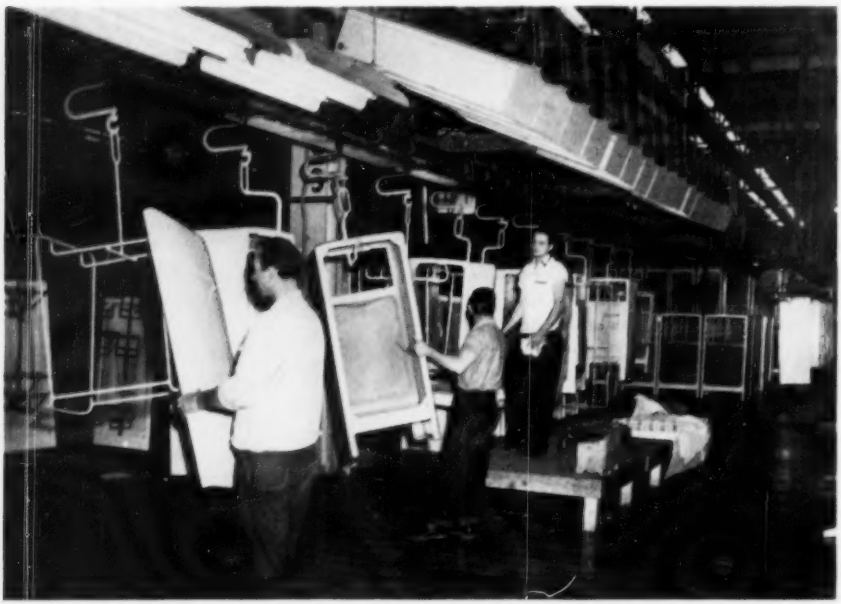


Fig. 8—A view of the inspection and storage area. Finished cabinets are inspected under a battery of Macbeth Examalites (top right) which simulate daylight illumination and thus show cabinets as seen by the consumer. (PRODUCTS FINISHING staff photographs)

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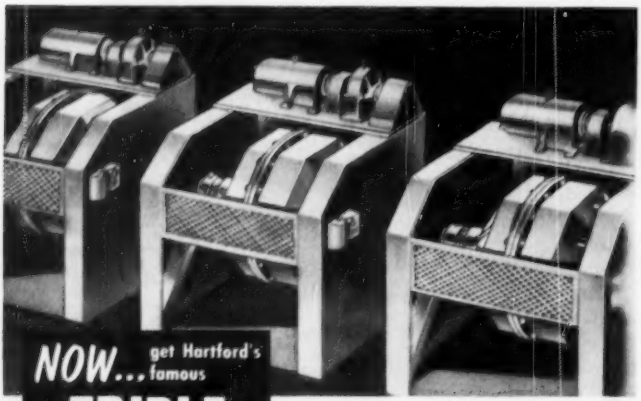
overflow water flows over a weir into a trough connected to the filter. The flow of the surface water over the weir carries the deactivated paint, which is floating on the surface. Flowing down the trough, the wash water and deactivated paint are carried onto the filter surface, the paint being caught on this surface (Fig. 7), and the wash water filtering through into the filter tank. The filter itself is automatic in that the filter media (a fibrous paper with great strength in the direction of the grain), suspended on an endless wire mesh conveyor, becomes impregnated with paint as the filtration process continues, and thus does not filter as rapidly. This raises the level of the water on the filter media, which in turn raises a float. This float actuates a motor which moves the conveyor, bringing fresh filter paper into place. Filtration speed then increases, the water level again drops, and the float falls, stopping the conveyor. This cycle is repeated as necessary to prevent the overflow of the water and provide new filtering media.

White paint is reclaimed from the filter media, which drops off into a container. Only white paint is re-



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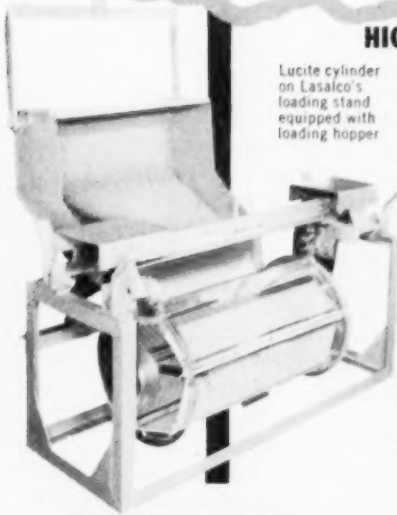

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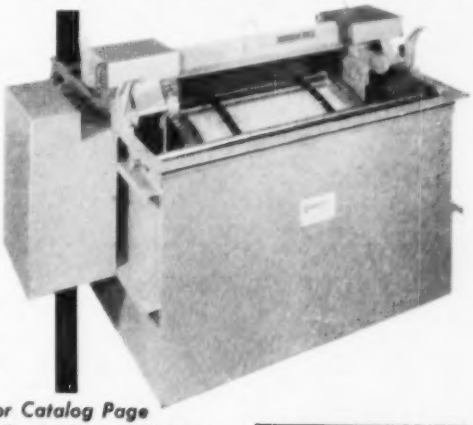

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claimed and sold, as the volume of colored paint used does not justify reclamation.

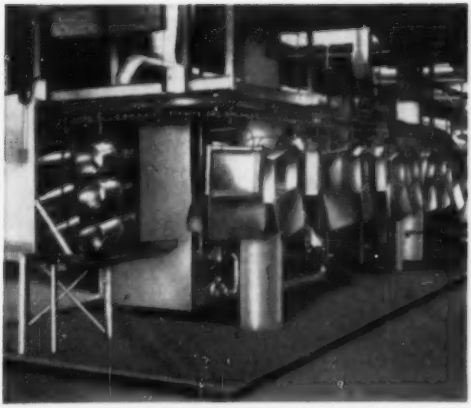
Finished cabinets are transferred to an inspection and storage area, where they are checked for defects, and given visual inspection for appearance (Fig. 8). Visual checks are made under a Macbeth Examalite, which simulates daylight illumination, and thus allows products to be checked under the conditions of consumer use. Little difficulty is experienced by this plant in color matching, as all raw materials are checked closely for quality, and process details, such as baking temperatures and times are kept uniform at all times. Thickness checks of the wet film and dry film are made with General Electric and Interchemical thickness gages.

Steel flooring is used in much of the area around the inspection and storage section, as cabinets are no longer on the conveyor, and can be moved most conveniently by sliding on the floor.

One other finishing operation of interest being performed at this plant is that of painting debossed lettering, such as is used to label the various compartments of the refrigerator. This is being done with equipment installed by Finish Engineering Company. Debossed parts are sprayed with paint, and the paint is wiped from all the surface except the debossed area by these machines.

This large and complex, yet smooth functioning, finishing installation (the complete finishing sys-

Should you purchase a cleaning or processing machine *Now*?



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"Costs have risen. Selling is more difficult. Profit margins have been shaved. Should capital funds be invested in new equipment now or should they be held in anticipation of a change in market conditions?"

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Before you buy any cleaning or processing machine write Alvey-Ferguson. If one of our "standard" machines will not "do the job"—and at lower cost, remember the A-F Engineers are specialists in *custom-built equipment.*

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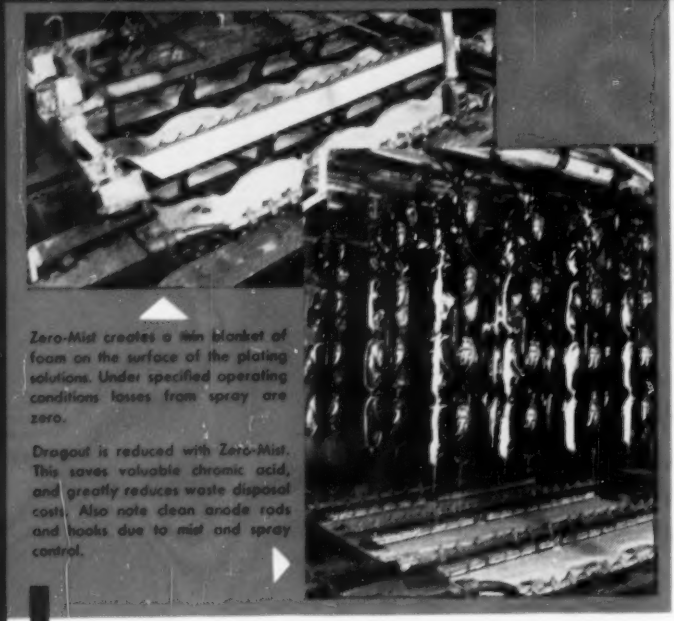

Zero-Mist creates a thin blanket of foam on the surface of the plating solutions. Under specified operating conditions losses from spray are zero.

Dragout is reduced with Zero-Mist. This saves valuable chromic acid, and greatly reduces waste disposal costs. Also note clean anode rods and hooks due to mist and spray control.

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for an easy test in your own shop

Now you can make your own simple test of Zero-Mist—the magic new product which controls mist and spray in chrome plating baths. Udylite is making this offer to familiarize chrome platers with the many advantages of Zero-Mist.

Many chrome platers are now using Zero-Mist with amazing results. Here's what it will do for you: give absolute control of chromic acid mist and spray saving up to 30% of chromic acid loss through the ventilating ducts—reduce the workroom air pollution—cut dragout losses—lessen pollution of rinse water—save on maintenance of existing hoods, ducts and fans used in ventilating systems—cut your chromic acid losses from mist, spray and dragout up to 70%.

Write for a Zero-Mist sample today. We will send it to you free with complete instructions for an easy small scale test in your own shop. Fill out coupon below.

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Please send a free sample of Zero-Mist with instructions which will enable us to make our own test. Mail to:

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tem occupies a floor area 210 by 96 feet) is a tribute to the careful planning of General Electric engineers and the cooperating suppliers of finishing equipment who installed the processes and machinery that make possible this efficient production.

★ ★ ★

BRAND OF THE TARTAN, by Virginia Huck, Published by Appleton-Century - Crofts, Inc. Price, $3.50.

This book traces the history of the 53-year-old Minnesota Mining and Manufacturing Co., developers of abrasive discs, abrasive cloths and industrial adhesives used throughout the metal finishing industry.

The firm was launched in northern Minnesota in 1902, to exploit a deposit of corundum, which was finally adjudged worthless. The firm's first success came when the manufacture of sandpaper was undertaken, using abrasives bought from others. Today Minnesota Mining and Manufacturing handles 25,000 different items, including the famous "Scotch" Brand tapes. The American Institute of Management calls it one of the five best managed corporations in the United States.

"Brand of the Tartan" tells how all this happened — the failures and successes, and the men who played leading roles in the development of the company.

ELECTROLESS NICKEL PLATING. A booklet by Dr. Abner Brenner of the National Bureau of Standards, presenting a summary of available information on the commercial uses of electroless nickel plating, is available from the Reader Service Section, **The International Nickel Co.**, 67 Wall St., New York 5, N. Y. Fourteen specific installations and the type of work handled by each are described. Entitled, "Electroless Plating Comes of Age," the booklet briefly reviews processes for nickel deposition on noncatalytic surfaces. It also reviews equipment and operating conditions needed.

★ ★ ★

FAN ENGINEERING FILM. Aerovent Fan Company, Inc., 765 E. Ash St., Piqua, Ohio, has announced the release of a 16 mm. sound film in color covering "Industrial Axial Blow Fans." The movie was filmed and produced in Aerovent's Engineering Department and describes the three basic types of axial blow fans, their inherent characteristics and methods of testing employed in modern fan engineering laboratories.

In addition, the movie discusses the subject of static pressure limitations of propeller fans, the common misconception regarding noise levels of these units—as well as an extensive treatise on the method of determining reliable fan performance and rating data.

For complete details or information regarding availability, write Aerovent Fan Company, Inc., 765 East Ash Street, Piqua, Ohio.

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When you buy Udylite barrel plating cylinders you get more than good materials—you get the experienced engineering that has made Udylite barrels the best built, longest lasting, most economical barrels on the market. For Udylite barrels are constructed with the characteristics of the materials well in mind—and engineered accordingly.

Along with fine engineering Udylite is in continuous search for materials giving longer life and greater over-all economies in barrel plating. Udylite manufactures barrels of Rubber, Bakelite, Melamine, Lucite and now in turn has developed Tempron Hard Rubber.

Tempron Hard Rubber is recommended as the best plating barrel cylinder material now available, but its characteristics require special construction. Udylite's new construction (patent pending) features interlocking panels and ribs with the added advantage that panels, ribs, rails and cylinder heads are individually replaceable.

Tempron Hard Rubber has greater abrasion resistance, will handle more cleaning and plating solutions at higher temperatures including hot Stannate Tin, and with Udylite's new construction, will take the hard pounding of heavier loads day after day.

It will pay you to investigate Tempron Hard Rubber cylinders. Fill out the coupon below and mail today.

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We would like to discuss Tempron Hard Rubber cylinders with your sales representative. Please have him call.

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FINISHING

Question: *We are looking for a finish to put on the tops of our aluminum springboards, which must be rough to prevent divers from slipping. The finish must stand up under wet and dry conditions, and also withstand the various chemicals used in pools.*

Will the aluminum have to be specially prepared by priming, etching, sandblasting or other methods?

Materials should also be somewhat insulating as the top of an aluminum diving board gets rather hot in the afternoon sun.

Any suggestions you may have will be greatly appreciated.

H. B. M.

Answer: A non-slip finish and other paint finishes are available from a number of sources. In all cases, it is our opinion that the aluminum will have to be prepared for finishing, the exact procedure depending upon the paint finish or finishes recommended by your paint supplier. Information on methods for the chemical treatment of aluminum may be obtained from several companies whose names we are forwarding.

Since the aluminum is to be used under conditions which will keep it wet most of the time, we believe you will find it more satisfactory to use a chemical surface preparation which will leave a corrosion resisting film on the aluminum. This can be coated with one or two coats of paint depending upon the type of coating recommended. A thicker coating will, of course, produce an improved insulating effect which, as you point out in your letter, is an important consideration.

———*fc*———

Question: *Our company is presently color anodizing aluminum foil on a full automatic machine. The full automatic was installed to decrease production cost and provide a more uniform product. Even with all of the close controls provided by a full automatic, we encounter difficulty in maintaining a uniform shade on the various colors we manufacture.*

It is our present opinion that a good portion of this difficulty results from an unequal distribution of the total anodizing current to the 22 anodize stations in our anodizing tank.

Because of this problem, we are presently investigating a method of providing regulated current to each individual work station. It would be of interest if you could advise the name of any company, or persons, who have worked on this particular, or a related problem.

W. I. P.

Answer: It is quite possible that the difficulty which you mention of maintaining a uniform color shade on your

CLINIC

anodized aluminum foil results from unequal current distribution.

For suggestions and further information, you may be interested in contacting the companies whose names we are forwarding.

We are enclosing a set of tear sheets of the article, "Metal Etching and Anodizing in Color," published in the April 1951 issue of PRODUCTS FINISHING, inasmuch as it describes an anodizing and coloring operation.

fc

Question: *We are encountering some cracking in service of steel springs and are trying to investigate all possible causes. One reason was suggested as being caustic embrittlement of the steel. Could you describe its characteristics and also refer me to some reference literature on the subject? I shall greatly appreciate any help you may be able to offer.*

L. D. B.

Answer: Cracking of steel springs in service may arise from many causes, all of them metallurgical in nature. First, the springs may not have been annealed properly after forming. Second, if the springs were annealed after forming and then were pickled to remove any annealing scale or stain, there may have been hydrogen embrittlement as a result of pickling. This can be removed by baking at a comparatively low temperature. Third, if the springs were plated with cadmium or zinc or any other metal, there is again the possibility of hydrogen embrittlement which must be removed by baking at about 300 deg. F. for 30 minutes to an hour after plating.

Any text book on the forming and heat treating of steel will discuss the hydrogen embrittlement, improper removal of forming stresses, and allied problems. It is possible that an investigation of the three possibilities mentioned above will lead you to a solution to your problem.

fc

Question: *We are seeking information as to the physical equipment required in chrome plating.*

It is believed that you can help us out on this or inform us as to where we can secure the information.

C. A. S.

Answer: We have your letter requesting information on chromium plating. As a matter of general information, we are forwarding with this letter a reprint of the article, "Hard Chrome Plating Made Easy," which was published in the December 1953 issue of PRODUCTS FINISHING.

For information regarding equipment and technique in chromium plating, we are referring you to several manufacturers.

DO YOU HAVE A FINISHING PROBLEM?

The editorial staff of PRODUCTS FINISHING is prepared to aid you in the solution of your problem.

There is no charge for this service.

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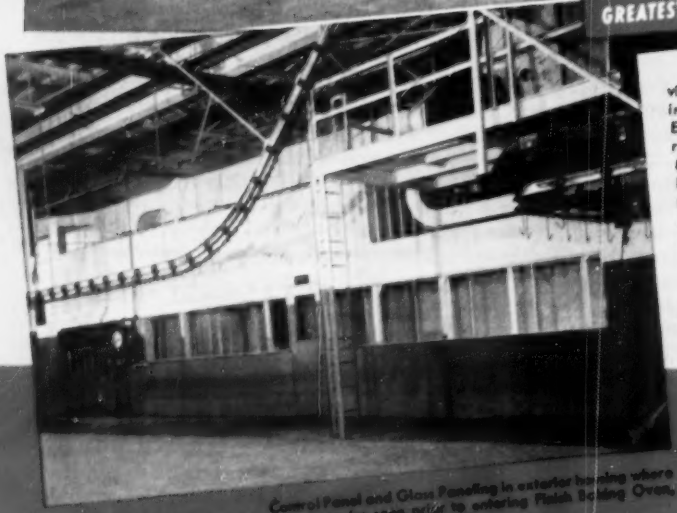
. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE to YOU!**



Control Panel and Glass Paneling in exterior housing where parts may be seen prior to entering Finish Baking Oven.

At the right above is a general view of the Complete Mahon Finishing System for Flow-Coating Black Enamel Parts at Chrysler Corporation of Canada, Limited. The 80 Ft. x 24 Ft. 450° Enamel Baking Oven, which is built against the roof trusses to provide storage space below, is visible in the background. Directly above is a close-up of the entrance end of the Flow-Coater showing Paint Mixing Tanks, Solvent Tank, Recirculating Equipment and Operating Control Panels.

M

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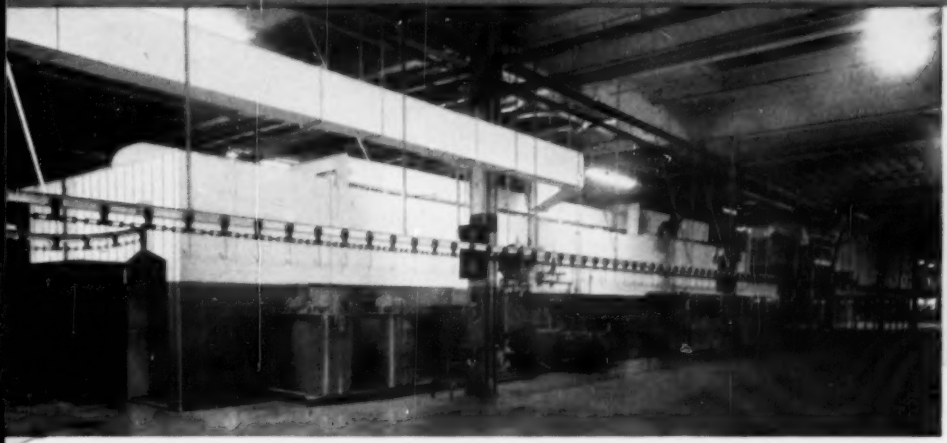

Black Enamel Parts at CHRYSLER CORPORATION of CANADA, LIMITED are FLOW-COATED in a COMPLETE MAHON FINISHING SYSTEM!

In addition to the body finishing system at the Windsor plant of Chrysler Corporation of Canada, Limited, Mahon also installed a complete finishing system for black enamel parts. This is a Flow-Coating System which includes a Mahon Flow-Coating Machine, a Ventilated Active Drip Zone, a Ventilated Inactive Drip Zone, and a 450° Finish Baking Oven with storage space below. Two Enamel Mixing Tanks and a Solvent Tank are provided outside the enclosure. The recirculating unit is equipped to automatically maintain the enamel at a specific temperature in the Flow-Coating Chamber. This is a typical Mahon Flow-Coating system, complete in every detail—automatic from start to stop. If you have a finishing problem, or are contemplating new finishing equipment, you will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements . . . and better qualified to do the all-important planning and engineering of equipment—which is the key to fine finishes at minimum cost. Whether your job is to be Flow-Coated, Dip-Coated, or Spray Painted either Manually or by Electrostatic Process, you will find that Mahon equipment will serve you better, because it is engineered better and built better for more economical operation over a longer period of time. Mahon will do the complete job for you on one contract—undivided responsibility for the entire system insures proper coordination and safeguards you against complications which may upset your production plans and subsequent schedules. See Mahon's Insert in Sweet's Plant Engineering File, or write for Catalog A-656.

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AHON

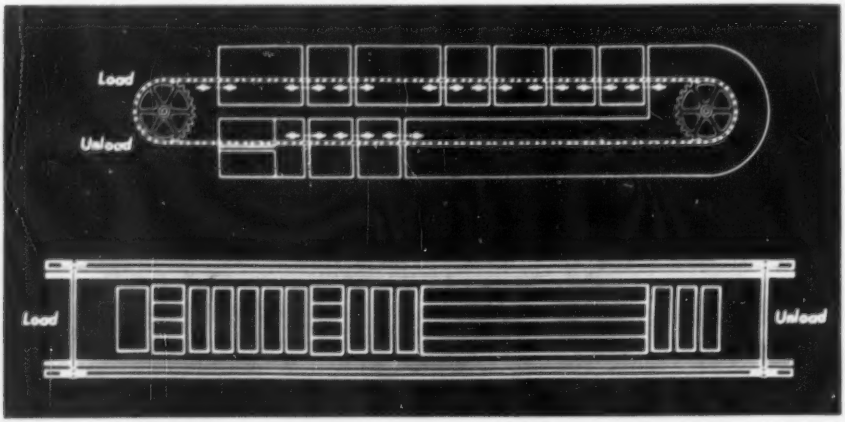
From Semi To Full

By FRED G. BRUNE
Metal Finishing Engineer
Chrysler Jet Engine Plant
Detroit, Michigan

THE CHANGE from semi-automatic to automatic plating for a plant is both drastic and final. It is the normal transition for a growing and expanding business, yet because of the large investment for equipment, this permanent change must receive careful consideration. A survey, reported in the American Machinist 1954 Production Planbook*, indicates that less than 50 per cent of the plating equipment can be considered as automatic equipment. Also that of the plating equipment 8 per cent is over 20 years old and an additional 32 per cent is 10 to 20 years old. Since automatic equipment results in both cost savings and improved quality of product it becomes a must for consideration by modern management. In Table I is listed some idea of the savings that can be obtained for a small unit used to zinc plate parts

*Seventh American Machinist Inventory of Metalworking Production Equipment.

Fig. 1—Plan views of typical return type (above) and straight line (below) automatic plating machines, showing basic design differences. (Illustration courtesy Meaker Co., Chicago 50, Ill.)



Automatic Plating

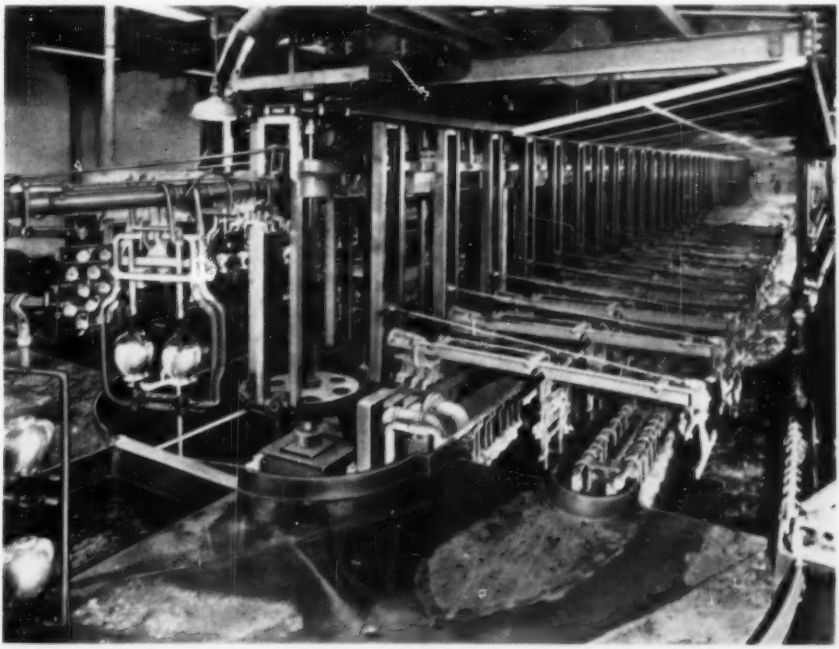


Fig. 2—View of a large return type automatic plating machine, showing production parts in process. (Photograph courtesy Hanson-Van Winkle-Munning Company, Matawan, New Jersey.)

about the size of a 3 quart pan.

What does the change to automatic plating in a plant mean to the man responsible for this operation? Successful operation of automatic plating equipment requires a change in plant operations just as great as would be experienced in changing from a dull nickel to a bright nickel plating solution. Early recognition that automatic plating is as different from an automatic punch press as day is from night will be of considerable assistance. Most automatic equipment in modern plants is designed to produce a given type of work at high volume, but automatic plating units are designed to move large amounts of metal from anode to cathode regardless of work shape. It is essential that provisions be made in the equipment so that it can

TABLE I

Savings for Automatic Zinc Plating Instead of Semi-Automatic-Five Months' Operation

Item	Quantity	Saving/Piece	Saving
Part A	836,184	$0.0043	$3,595.59
Part B	612,876	$0.0035	$2,147.07
		Total	$5,742.66

accomplish what may be required by the plant's products! But it is just as necessary that other personnel in the plant be acquainted with the basic differences in automatic plating from other automatic units, or the plater will always be in hot water.

To be prepared to change to automatic plating equipment, it is the duty of all concerned to see that the past experiences obtained on your product be considered for incorporation into the automatic machine. These items can then be covered in the written specifications for vendors to use in making equipment quotations. The manufacturers of plating equipment provide excellent assistance in planning an automatic plating program, but can help you best only when they understand all your desires, what you hope to do, and the results you wish to obtain.

Some of the basic considerations

Fig. 3—Elevation view of a return type automatic plating machine showing load and unload position. Note that design of machine provides for an inspection station as well as a loading station. (Photograph courtesy The Udylite Corporation, Detroit 11, Michigan.

are the general layout in the plant itself to obtain the best installation for the present and still allow for future developments. The degree of importance of the various factors must be established for each plant. For example a prime producer, who has control of both specifications and part design, does not have to provide for the same flexibility as a supplier to a prime producer. Factors to be considered in a new setup that are interrelated and which must be evaluated are listed below:

1. Do you want a return-type or a straight-line machine?
2. Do you want a single or multiple operation machine?
3. Do you want any pre- or post-plating operations?
4. What are the work storage, rack, and unrack problems?
5. What are the utilities and waste water disposal problems?
6. Future expansion?

1. Return or straight-line machine.

The basic difference in the two types of machines is in the rack loading and unloading points, which is made clear by reference to Fig. 1. Volume of production and labor cost must also be considered under this heading. If the work is to be loaded and unloaded by mechanical means the straight-line machine has the advantage of being simpler to adapt. Whereas, when the racks are to remain on the machine during re-racking the return-type machine has the advantage.

The straight-away type will produce the most racks per hour per operator cost. But the return-type has the advantage of minimum cost when the rate of production varies since it can be operated by one man. The straight-line unit requires a minimum of two operators.

With a volume of 100 racks per hour or more the straight-line machine will produce more work per square foot of occupied floor space. However, the return-type unit can have changes in tanks and rack lifts made both in a minimum amount of time and at minimum cost compared to that required to modify a straight-line machine. How each factor affects your conditions must be decided. Several of the different machines are shown in Figs. 2, 3, 4, 5, 6, and 8. A special type of return-type machines is the "rotary" machine that has a central lift unit with the plating tanks situated in a circle around the lift (Figure 7).

2. Do you want a single or multiple operation machine?

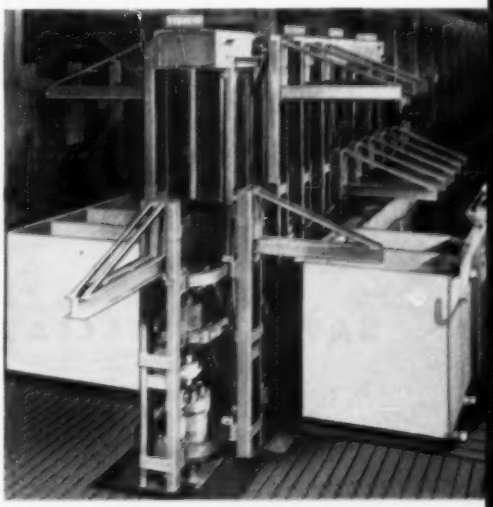


Fig. 4—Stevens "Stevadoer" automatic plating and processing machine. (Photo courtesy Frederic B. Stevens, Inc., Detroit 16, Michigan.)

Automatic Plating

The size and number of machines should also be considered when answering this question. In the writer's opinion, unless you are certain of what the unit will produce until its book value is retired, a unit should be limited in size to producing 500 to 1,500 square feet of work per hour on an exterior deposit using copper and/or nickel and chromium. Where the parts are small (under a square foot) the lower limit applies and with parts several square feet in average size the higher limit is used. For special applications such as small knobs or bumpers, the limits have no meaning.

In general, most plating operations can be combined into a single machine. But consideration must be given to any special factors in each case before proceeding. For example, when nickel and chromium are plated in the same machine, all arms on the machine must have heavier copper bars and more contacts to provide electrical current carrying capacity for the chromium plating. In a large unit with a large number of cleaning, rinse and treatment tanks, this extra cost to carry high electrical current sometimes equals or exceeds the cost of a separate machine

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for chromium plating.

Is the same plate thickness specification required on all parts and if so will this condition continue in the future? Since there is a big difference in plate thickness between interior and exterior exposure requirements separate machines for each condition may be desired in place of one large unit. But if only a small volume of the parts is different in plate thickness requirement, then the unit should be designed with the large volume product in mind and allowances made for processing the remainder.

Type of work will also influence considerations, and is a paramount factor in quality plating. The success of automatic plating hinges upon the fact that different parts can be arranged on racks so as to have an effective area per rack that is constant. Lucky indeed is the plater who can rack all parts so that the machine can operate at a high average current density. Usually some of the parts are of a simple shape that can be plated at a high current density, but other complex parts must be plated at low current density. When this is the case and the production volume is high, two machines each designed to fit one condition are better than a single large machine.

Another way to overcome a problem of this type is to provide in the machine for the separation of the work lanes, so that different plating conditions can be controlled in adjacent lanes. In general the multiple machine that performs several plating operations such as copper, nickel and chromium will produce work at

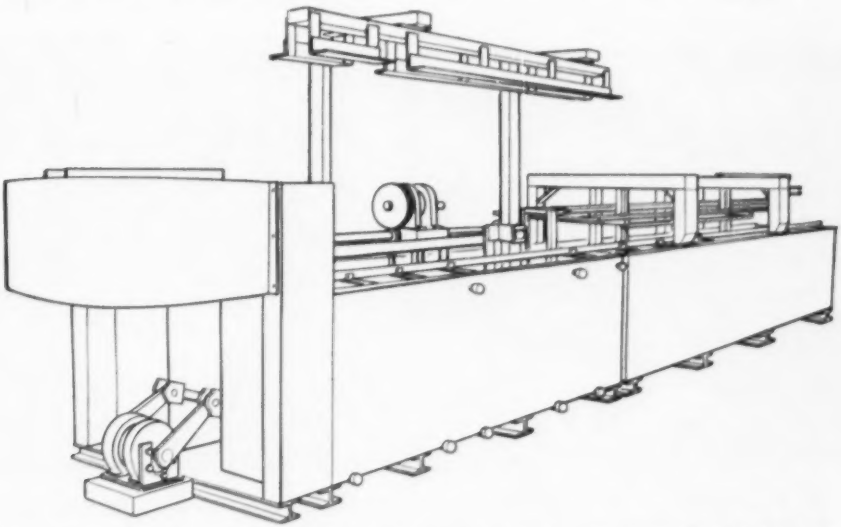

Fig. 5—Drawing of "Platocrat" return-type fully automatic plating machine. Two basic conveyor movements carry racks of parts being plated through the full plating cycle. one forward and reverse straight line horizontal motion; one raising and lowering vertical movement. (Photograph courtesy Wagner Brothers, Incorporated, Detroit 3.)

the lowest possible cost per unit part. The single plating machine used to deposit only one metal provides maximum flexibility and is easier to convert to plating a different metal. To the plating engineer these facts plus his own plant problems as listed below must be considered:

1. An auto plant can select a multiple-cycle machine of a large size, since even with model changes the plant selects the parts to be manufactured and those to be purchased.
2. A vendor to an auto plant must use multiple-cycle machines to be competitive cost-wise, but will frequently use two small machines in place of one large unit.
3. A job shop that serves all customers as well as the overflow from the above two shops must be flexible enough to do a quality job on any part, so may use either single- or multiple-cycle machines.

The above is part of the reason that when the question is asked "How much does it cost to plate per square foot?" the answers vary over such a wide range. The cost of equipment in the three plants listed above, as well as floor space and operation cost, will increase with the flexibility of the plant.

3. Do you want any pre- or post-plating operations?

For any major soil removal problem the writer recommends the use of a pre-cleaning cycle so that the plating machine has only the final

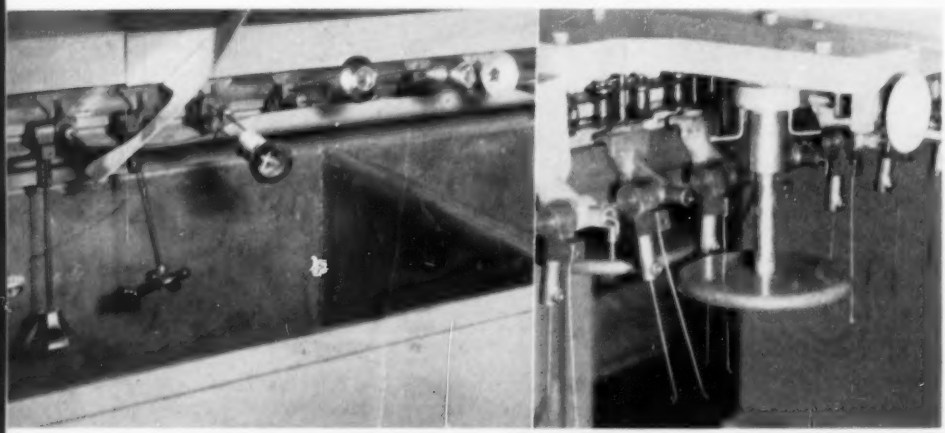

Fig. 6—The Daw, Jr. full automatic plating machine handles individual parts on wire fingers. As can be noted in the photo at left, transfer from tank to tank is accomplished by lift-over cams. The wire fingers (or small racks) are attached to carriers which move through the cycle on a chain drive. The photo at right shows how wire fingers are pinched together after the completion of the plating cycle so that parts drop off automatically upon completion of plating operation. (Photo courtesy Lasalco, Inc., St. Louis 4, Missouri.)

cleaning and acid dips required for the particular plating operation. The reasons for this can be listed:

a. It is cheaper to install pre-cleaning equipment than it is to make plating machines longer.

b. The pre-cleaning cycle time can be modified without changing the plating cycle.

c. It is easier and cheaper to modify a pre-cleaning conveyor set-up than one contained in a plating machine.

d. When several automatic plating machines are in use, one large pre-cleaning setup can be used to prepare work for all the machines.

e. Cleaning problems which are a major factor in automatic plating can be solved quicker.

f. Individual unit cycles are shorter, and the amount of time lost during normal shut-downs is held to a minimum.

Post-plating cycles can be used when it is necessary to provide additional rinsing and drying of parts, as well as for the stripping of chromium from racks prior to re-cycling thru the plating process.

4. What are the work storage, rack and unrack problems?

Fortunate indeed is the plater whose management realizes that plating is a processing rather than a production problem! For most plant operations, such as press work or die casting, the preferred method is to place the die and run a large volume of each part. Whereas, with plating it is desirable to have uniform condi-

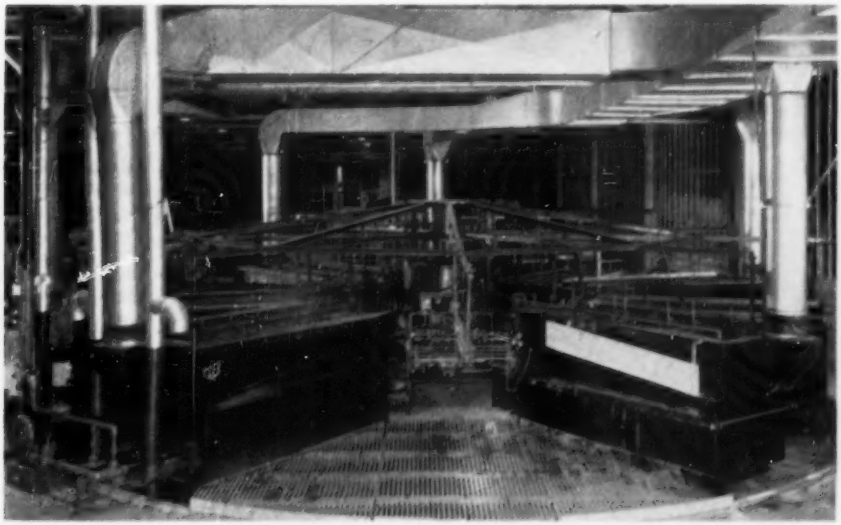

Fig. 7—Rotary type plating machine in which umbrella-type frame is raised and lowered hydraulically, viewed at the load-unload station. (Photo courtesy The Udylite Corp., Detroit 11.)

tions and run all parts on a regular basis with as few concentrated production pushes on any individual part as possible. The reasons for this can be discussed:

a. Rack Cost.
   The more regular the schedule the fewer the racks required and the less the rack investment and storage space.
b. Rack Repair.
   On a regular schedule rack repair can be accomplished as required. When there is a push on a part, the rack for that part cannot be removed for its normal repair. Further use of a rack needing repair rapidly increases a minor repair job to a major overhaul.
c. In spite of the best rack design, it is impossible to have exactly the same effective area on each rack of different type parts. Some will have less area and have a tendency to "burn," while others will be overloaded and result in thin plate. Proper interspacing of various parts overcomes this problem, but running one type of part increases the trouble.
d. Production Control.
   In a department where the pieces per rack may vary from 2 to 200 parts, it is easy to see that improper scheduling will involve either excessive costs or loss of machine production time.

For optimum plating results, a bank of parts that can be buffed or

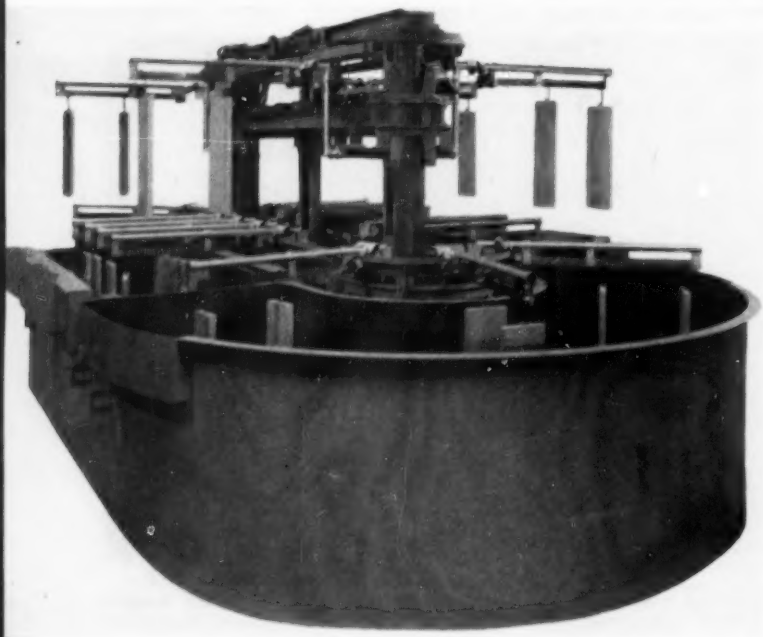

Fig. 8 — The Meaker Low Head Side Arm Plating Machine is a hydraulically powered, intermittent motion unit. Operating mechanism is on central structural frame located between two rows of tanks. Automatic loading and unloading of racks onto trolley conveyors can be incorporated into the machine. (Photo courtesy The Meaker Co., Chicago 50, Ill.)

finished as required for constant schedule through the plating department is essential. Racking and unracking in the same or adjacent areas obtains the maximum usefulness of both racks and manpower.

5. What are the utilities and water disposal problems?

Master steam, water and air valves for each automatic plating machine are desirable for shutdown and emergency periods. Separate electrical circuits for d. c. power sources and pumps are desirable so that circuit failures in other areas of the plant do not affect the plating machine, causing scrap or rework losses on parts. Waste water disposal problems are increasing in most areas. Segregation of waste water into alkaline-cyanide and acid-chromium, when new installations are made, is highly recommended.

6. Future expansion?

Little advice can be listed for this except to note that in the past 20 years the improvement of bright finished parts both as to lower cost and better quality has been due to new plating baths and their operation. So be sure that the equipment is up-to-date and allows for incorporation of any improvements that can now be seen in the laboratory stage.

Along about now, I can imagine a reader saying, "All this is good in its place, but what facts can I give the boss on a few hours' notice as to how much automatic plating will cost us?" To answer such questions I have prepared some composite data that can be readily used to give a rough estimate that will be adequate for most cases. All that the plating man must calculate is the number of square feet of area to be plated per hour. Then, to get the rough cost estimate, merely select the number

TABLE II

Approximate cost to install automatic plating for various types of metals as listed. To use multiply cost factor by the number of square feet of area to be produced per hour.

PLATING CYCLE	COST FACTOR
Copper-Nickel-Chromium Copper 0.0003-5 inch Nickel 0.001-2 Chromium 0.00001	$600
Nickel-Chromium Nickel 0.0015 inch Chromium 0.00001	$450
Copper Copper 0.00075 inch	$130
Cadmium or Zinc Thickness 0.0003 inch	$85
Chromium Chromium 0.00001 inch	$100
Barrel Plating Cadmium or Zinc Thickness 0.00015-20 inch	$50

TABLE III

Typical Breakdown on Installation Cost of Automatic Plating Machines. Includes both the equipment and installation cost. To use the numbers listed merely multiply by the square feet of area to be produced per hour.

Item	Nickel Chromium	Copper Nickel Chromium
Machine	$200	$250
Generators	$100	$130
Auxiliary Equipment	$55	$90
Exhaust Ventilation	$30	$50
Utilities & Controls	$25	$35
Racks & Miscellaneous	$40	$45
Total	$450	$600

Automatic Plating

from Table II for the type of plating and multiply it by the number of square feet of area to be processed per hour to obtain the answer.

The data will be most accurate in the range of 500 to 1000 square feet per hour of plating capacity. (It is interesting to note that, because of the short plating cycle in bright chromium plating, a hoist-type line with four plating tanks would cost $225 compared to $100 for an automatic machine per square foot per hour of capacity). A detailed breakdown of the installed cost will vary more between different installations than will the total cost, but to give some general idea of how the cost is allocated, typical cost for copper-nickel-chromium and nickel-chromium machines is listed in Table III.

For some general information, such as the floor space requirements and other items, see Table IV that lists numbers which, when multiplied by the square foot per hour of plating capacity, will give you an approximation for your installation.

For the plant which already has automatic plating equipment, consideration must always be given to improvements as time passes by. Someday the unit will have to be

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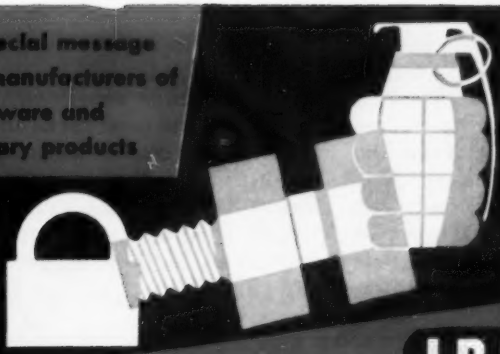

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replaced, and it may be cheaper to do this early, rather than to wait until it just has to be done. Table V shows some data comparing the operation of a machine 10 years old with a new machine. The period of operation was so selected that filter operation and cleaner makeups were about equal. The new machine was used to plate parts to exterior thickness requirements, while the older machine plated both exterior and interior thickness requirements. The older machine used racks that were about 60 per cent of the area capacity of those in the new unit. Therefore, although the older machine was still in good operating condition, it cost about $1400 more per week to run parts in it.

TABLE IV

Estimates on some general items that are of interest in installation of automatic plating machines. To use the numbers listed merely multiply by the square feet of area to be produced per hour.

Item	Copper	Copper Nickel Chromium	Nickel Chromium	Chromium
Floor Space (square feet)	6	14	10	3
Steam (pounds per hour)	8	20	11	3
Water (gallons per minute)	0.11	0.33	0.21	0.13
Exhaust Ventilation (cubic feet per minute)	42	86	64	25
Installation (man-hours)	7.6	20	15.2	4.7
Installation (% mechanical)	75	60	50	45
Installation (% electrical)	25	40	50	55

TABLE V

Cost Comparison Between a New and Old Automatic Plating Machine.

Item	New Machine	10 year Machine
Average Area per Piece	0.326 Square Feet	0.157 Square Feet
	Cost in cents per square foot	
Copper Chemical Cost	1.37	5.79
Nickel Chemical Cost	1.48	2.82
Copper Anode Cost	1.31	0.98
Nickel Anode Cost	3.50	2.52
Direct Labor Cost	3.50	8.30
Total Cost	11.16	20.41

Note: The new machine plated racks with larger parts all to exterior plate thickness requirements. The 10-year-old machine plated smaller parts for both interior and exterior plate thickness requirements. The racks on the old machine had 60 per cent of the area capacity of those on the new unit.

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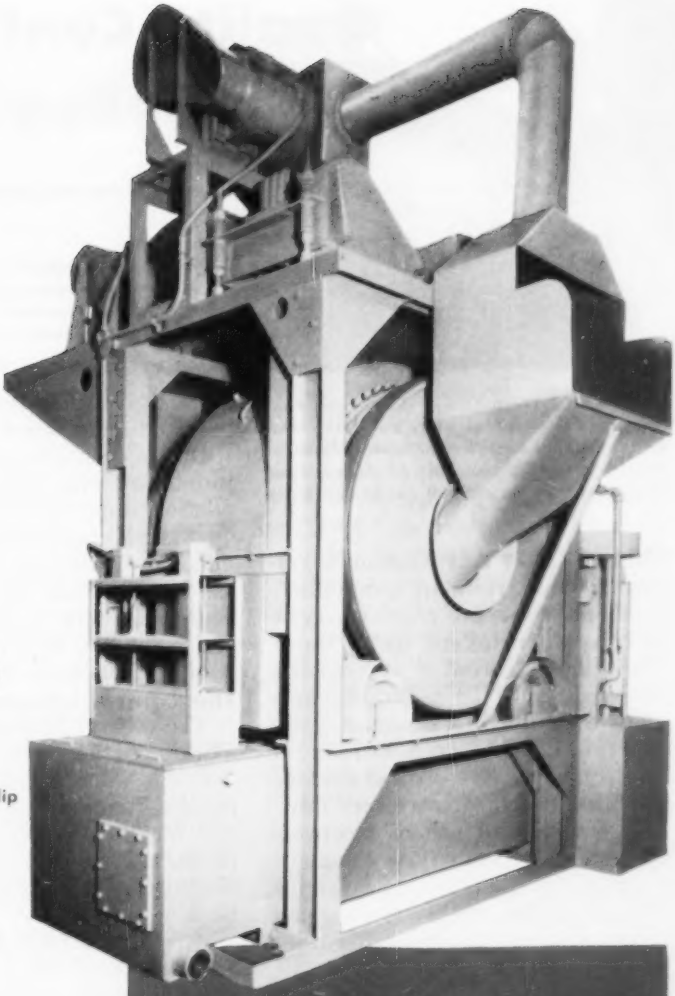

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Quality Control and Application

By ARNOLD C. WASSER
Supervisor, Analytical & Control Lab.
United Chromium Division,
Metal & Thermit Corporation

Fig. 1—A. C. Wasser, supervisor of the Analytical and Control Laboratory checks the master formulation book for the correct formulation of a specific plastisol. All formulations in the book are on a 1000 pound unit basis.

BECAUSE THEY ARE resistant to corrosion, tough, resilient and scratchproof, plastisols are gaining acceptance as an excellent metal finish. They can be extruded, dip-molded, slush-molded, roller coated, dip coated or cast into sheets. A sprayable plastisol also has been introduced. New applications for these coatings are being found almost every day.

The successful use of plastisols, however, is dependent on the maintenance of uniform standards in every stage from the purchase of raw materials through final application by the metal finisher.

Plastisol technology today can mass-produce a product of uniform quality and predictable performance. A plastisol consists of at least four or five different ingredients, including the resin, pigments, plasticizers, heat and light stabilizers and, in some cases, solvents. Developing a plastisol formulation is almost an art rather than a science. It takes long and extensive laboratory research, pilot plant testing and exacting production know-how.

Once a desirable plastisol has been formulated and brought to the production stage, a product of uniform quality and performance can be produced if materials and procedures are standardized and controlled. A control laboratory, properly staffed and equipped, is a must for a plastisol manufacturer.

The Control Laboratory

The control laboratory at United Chromium Division of Metal & Thermit Corporation has three important, fundamental functions: control of all incoming raw materials; production quality control; responsibility for the master formulation book (Fig. 1).

After a new formulation has been added to the product line, a formula sheet is written up for the basic formula book with a copy to production. This sheet lists ingredients to be used, quantities by weight and exact steps to be followed in production from grinding to packaging. On receipt of an order for a particular formulation, production must check its proposed formulation with the control laboratory before production can start.

Tests for Plastisols

Once the formulation has been checked by the laboratory, the next step is to obtain materials from raw material stock. Production cannot obtain raw materials unless and until they have been released after approval by the control laboratory. This is an important precaution. Any one of the ingredients in a plastisol formulation can cause non-uniformity in the product unless rigid quality controls are maintained for raw materials.

Raw Material Control

The function of raw material control is essentially to see that suppliers adhere to their own specifications. For that purpose, the control laboratory maintains a Specification Book and a Raw Material Code Book. The former contains specification sheets obtained from the manufacturers, and is kept up to date. When a new source of supply becomes available or if a new material comes on the market, specification sheets are obtained promptly and entered in the book.

Another important record kept by the control laboratory is the Standard Test Procedure book. Here are recorded, in step-by-step detail, procedures to be followed for quality control tests both on raw materials and on production batches. Standardized in this way, test data from day-to-day, month-to-month or even year-to-year can be correlated and compared to see that rigid standards are met at every stage of plant operations. Again, this rigid control

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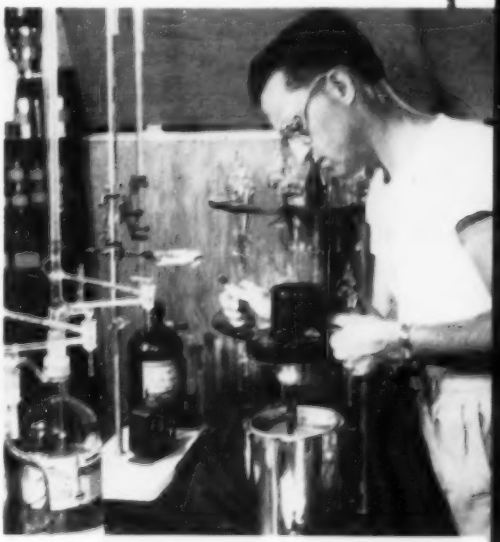

Fig. 2—A quality control test for plastisols is the viscosity test. The laboratory chose the Brookfield Viscosimeter because the unit is easy to read and clean, and gives results in absolute units. The instrument shown here literally measures the resistance to rotation of a spindle in the plastisol whose viscosity is being determined. Four interchangeable spindles and four speed ranges permit viscosity measurements ranging from 1 to 100,000 cps.

minimizes the effect of the variable "human factor."

Depending upon how critical the raw material is, insofar as its effect on the final product is concerned, quality control may call for a simple visual examination, or extensive testing with a variety of instruments. Each shipment tested is given a numbered card on which all the pertinent test data is recorded for a permanent record.

Raw Material Testing

A plastisol is essentially a dispersion of vinyl resins in non-aqueous liquids, so obviously quality control is important for the resin. Another reason for the need of rigid control here is the fact that resins lend themselves to the greatest variation in manufacture.

Fig. 3—After a run is completed, the specific gravity is measured with a Gardner weight/gallon cup. The test cup is on the left side of the scale. In the background are the cans of samples taken from the various runs. The samples are used for all necessary laboratory and application tests, and as shelf samples.

The resin is supplied as a very fine powder and each batch upon arrival is subjected to two classes of tests. The first is the Volatiles Content test and, as the name implies, the test is to check that the volatiles content does not exceed the specification set by the manufacturer.

The second and more elaborate test is the Viscosity test (Fig. 2). For this test the control laboratory tried as many as eight different viscosity measuring instruments before the chief analytical chemist was satisfied. The instrument finally chosen was the Brookfield Viscosimeter.

The Brookfield Viscosimeter measures viscosity in absolute units, that is, poises. In physical terms, it measures the resistance to the rotation of a spindle in the dispersion.

Solvent Testing

A fairly elaborate test procedure is followed for quality control of those solvents used as diluents in sprayable plastisols as well as in allied products such as organisols. Before solvent from a supplier is pumped into the company's storage tanks, samples are obtained for test and approval. Three basic tests are used to determine purity. The cloud point test is used to determine moisture content of hydrocarbon solvents. A shipment is rejected if the water content exceeds the standard.

A sample of the solvent is distilled to determine the distillation range according to the ASTM Standard. This is a check on the solvent pur-

ity. The best test for solvent purity according to United Chromium's control laboratory is specific gravity. The laboratory tried three different instruments for this test, a hydrometer, a Westphal balance and a pycnometer—and found the latter to be convenient, and most accurate since it employs an analytical balance which yields results accurate to 0.0001 gram. If the specific gravity of a solvent does not fall within the specified control range, the shipment is rejected.

Quality control tests for pigments, stabilizers and plasticizers need not be as critical or elaborate. The most commonly used plasticizers are liquids and they are tested for purity by a specific gravity test, and for color and clarity by visual comparison with standards. Pigments are generally tested for ash content by weighing a sample before and after ashing. The ashing is done in a muffle furnace for a fixed time at a fixed temperature. In some special cases, an oil absorption test is made if a fluctuation in viscosity characteristics is encountered in the final product.

Stabilizers can be either liquid or solid; if liquid they are given the same tests as plasticizers; if solid, the same as pigments. In addition they may be given an application test. A film containing the stabilizer is baked out and compared visually with a standard film.

Production Control Tests

The Control Laboratory maintains its vigilance after the raw materials go into production. Before a plastisol batch is processed, the materials are tested for fineness of grind, specific gravity (using a Gardner weight/gallon cup) and intermediate viscosity. After a run is completed, a test sample is taken from each drum and the tests run include pigment content, fineness of grind, weight per gallon or specific gravity (Fig. 3), and viscosity stability. The latter is particularly important.

The performance of the plastisol depends to a great extent on viscosity characteristics. And if the viscosity changes over a period of time the metal finisher who uses it will get a finish that varies in quality. For that reason, the control laboratory makes a minimum of two viscosity determinations. One viscosity test is run just after a batch is completed and another is made from 24 hours to one week later. Subsequent runs are often made at intervals of from one

Fig. 4—One of the application tests for a sprayable plastisol is, naturally, a spray application test on a test panel. The coating obtained is examined closely for uniformity, quality, appearance, and other qualities. (Photos courtesy United Chromium Div., Metal & Thermit Corporation, New York 17, N. Y.)

month to two years later.

This test reflects the stability of the product and its "shelf life" characteristics. The initial viscosity changes within a week or at most two weeks, and then should level off to what is termed equilibrium, or ultimate viscosity.

In addition to the laboratory tests, a number of samples are retained for application tests. The latter are designed to duplicate as much as possible the conditions under which the product will be used. Results are evaluated in the same way that a metal finisher would do it in his own plant; namely, uniform quality, ease of application, no tearing, and so on.

In baking out a finish, the schedule as specified for the user is adhered to. Samples are cold dipped, hot dipped, roller coated, or sprayed, depending upon the end use of the plastisol.

In the case of spray plastisols, it is necessary to thin out the plastisol before it can be sprayed. The control laboratory establishes the optimum thinning ratio, runs a viscosity on the reduced material — followed by an application test consisting of spraying one or more panels (Fig. 4). The coating obtained is then closely examined for uniformity of thickness, quality and appearance.

Shelf samples of each batch going to a customer are retained for a minimum

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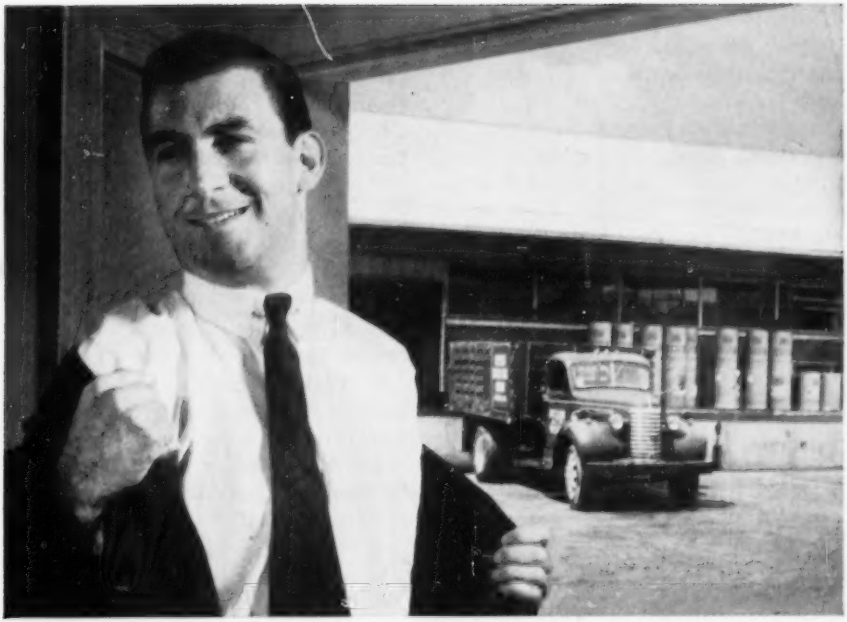

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of one, and in most cases, two years so that they can be checked out should a user raise any question as to satisfactory service.

A control laboratory operation, as described here, is expensive and time-consuming. But a metal finisher should expect a supplier to back up his product by careful controls. Only then can he feel confident as to the quality and service of the finish he applies.

★ ★ ★

Factors Influencing the Tarnishing of Silver Plated Products

THE INCREASING USE of silver plated electronic components and other products for industrial use has brought with it a problem of preventing the silver surface from tarnishing. This subject was discussed briefly in the August issue of PRODUCTS FINISHING (page 98).

Some additional considerations or factors in the tarnishing of silver plated parts or the rate of tarnishing are as follows:

1. Silver plated material will tarnish slowly in dry atmosphere.

2. High humidity accelerates the rate of tarnish.

3. Plating thickness appears to have very little to do with resistance to tarnish. In some cases, it has been noted that heavier plating seems to be more susceptible to tarnish than thinner deposits.

4. Cleanliness in the container in which silver plated parts are stored is essential if tarnish is to be prevented. Oil and grease accelerate the rate of tarnish substantially. Physical contact between oil and silver plate is not required to produce tarnish; vapors from the oil will cause tarnish.

5. Certain kinds of pasteboard or cardboard will cause tarnish.

6. Tissue paper generally will not promote tarnish.

The tarnishing of silver plated material that is not to be used immediately may be retarded or prevented by storing the products in air tight containers free from dirt, grease and oil. If separators are required, the use of tissue paper rather than pasteboard is recommended.

ACKNOWLEDGMENT

The cooperation of G. N. Luiman, Mfg. Eng., Westinghouse Electric Corp., in supplying the above information is gratefully acknowledged.

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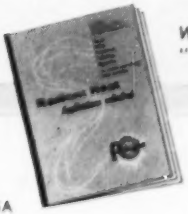

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- ***"cuts tumbling cycle time from five hours to one hour."***
- ***"finishes steel and magnesium parts that could never before be barrel-finished."***
- ***"completely removes burrs from stainless steel parts in four hours. Abrasives previously used failed to do so in 12 hours."***

Everything about Tumblex "T" abrasive is designed for better barrel-finishing.

Its uniform triangular shape and size prevents wedging in recesses of parts.

Made of famous Norton ALUNDUM abrasive, it cuts fast, with no compound needed — resulting in shorter time cycles and lower costs per piece finished.

It provides maximum surface contact with parts being processed, assuring top quality work in fastest time.

It wears down evenly, keeping the same triangular shape. No small chips to lodge in holes, slots, etc. — and when worn down it can be used on parts requiring a smaller size abrasive.

Its lightness means less weight required to fill the barrel. Results are more uniform finish, without roll-in or roll-over of edges of parts.

Its chemical inertness, unaffected by acids, compounds or detergents, prevents spoilage common to other types of abrasive.

Send Your Work Samples

to our newly enlarged Sample Processing Department. Let us prove to you how the latest barrel-finishing equipment and techniques can improve your product quality and cut your finishing time and costs. NORTON COMPANY, Worcester 6, Mass. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone directory, yellow pages. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

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ABRASIVES

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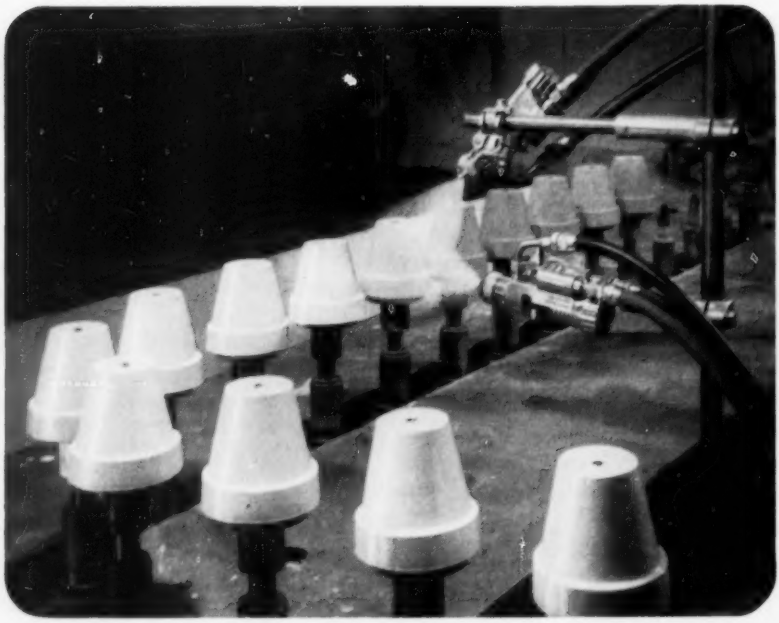
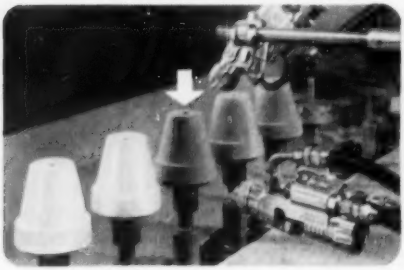
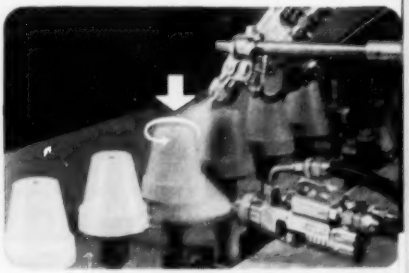
DeVilbiss automatics end



1 DeVilbiss automatic applies a flawless, uniform finish to flower pots at the rate of 3600 an hour. Spray cycle is synchronized with conveyor travel.



2 With spindles six inches apart, chain-on-edge conveyor moves pots into position.



3 At precise instant, two guns spray with overlapping patterns; pot revolves three times

reject problems . . .

once and for all!

Just load your product on a high-speed DeVilbiss spray machine, and reject problems are gone forever! Split-second timing, accurate gun positioning, and synchronized conveyor speeds prevent streaks, sags, and wasteful overspray. You actually *save* materials, as you produce consistently better finishes in a fraction of the time consumed by manual methods.

Test run shows how you save

DeVilbiss offers automatic spray machines for painting products of practically any size or shape, and for use with most conveyor systems. To have us run a test on your product and report savings *before you invest a cent*—send us full data about your product, coating applied, number of coats, and production rate desired.

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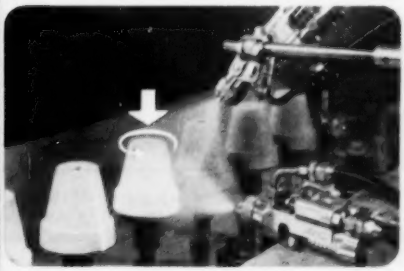
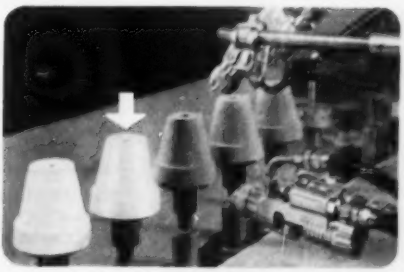


4 Painting takes one-half second. If spindle is empty, machine skips it; guns don't spray.



5 Finished pot moves as next one takes position. Total cycle only lasts one second.

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FISHING FOR CUT ELECTRO-

KNICKERBOCKER FOUND

- **Cut cost of solution correction**

WITH "PLUS-4" (PHOSPHORIZED

The Knickerbocker Electrotype Co. of New York filled its Tank No. 1 with AnacondA "Plus-4" Phosphorized Copper Anodes, set up Tank No. 2 as a control, using only electric tough pitch copper anodes. Solution concentrations are tested and corrections made weekly—and consistently Tank No. 1 with the "Plus-4" Anodes has shown the better record.

After five months of testing, Mr. William Welsh foreman of the plating department, expressed his satisfaction with "Plus-4" Anodes and made this statement: "Using regular anodes, we must hold our cathodes at least 4½ inches from the anodes This is necessary because the sludge from the old

WHY PLATING WITH "PLUS-4" ANODES COSTS LESS

+ **1** no anode sludge (no "bagging" or diaphragms required)
+ **2** no copper "build-up" in solution
+ **3** smooth, heavy cathode deposits
+ **4** up to 15% more cathode deposit per anode

SEE FOR YOURSELF—For details on how you can get a test supply o "Plus-4" Anodes sufficient to fill one tank, write to *The America Brass Company, Waterbury 20, Conn.* In Canada: *Anaconda Amer ican Brass Ltd., New Toronto, Ont.*

◀ Here is a "Plus-4" "fish" pulled out of a Knickerbocker tank. It measure .170" at the thickest part at the bottom and .058" at the thinnest point. Th

WAYS TO PLATING COSTS?

IN TEST THAT IT CAN:

- **Cut power costs by ⅓ or boost production**

ANODES

COPPER)

anodes will fall on our work and cause roughness. With the new 'Plus-4' Anode, there being no loose sludge, we could work much closer—only 3 inches away—which would reduce the resistance by ⅓—which would in turn reduce our power costs by about the same proportion. This would also reduce the heat generated by a like proportion."

Mr. Welsh explained that because Knickerbocker uses thermoplastic molds, heat is important—the tanks must run no higher than 95F to prevent warping. As an alternate to reducing power, he explained that he could use the same power and run plates through faster, increasing production.

55142A

"PLUS-4" ANODES

AN

ANACONDA®

PRODUCT

made by The American Brass Company

For use under Patent No. 2,689,216

remnant of a 40-lb. anode weighs only 2 lb., 3 oz. "Plus-4" Anodes corrode this way regularly—another indication of the superior job they can do for you.

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Spotlighting FINISHING Progress

A New Method of Protecting Magnesium

IN AN ARTICLE BY R. STRICKLEN in "Precision Metal Molding," *12 No. 8*, 59 (August 1954), a new process for the protection of magnesium from corrosion was announced, and its use and properties described. The process is called Iridite #15 (Mag-Cote)*.

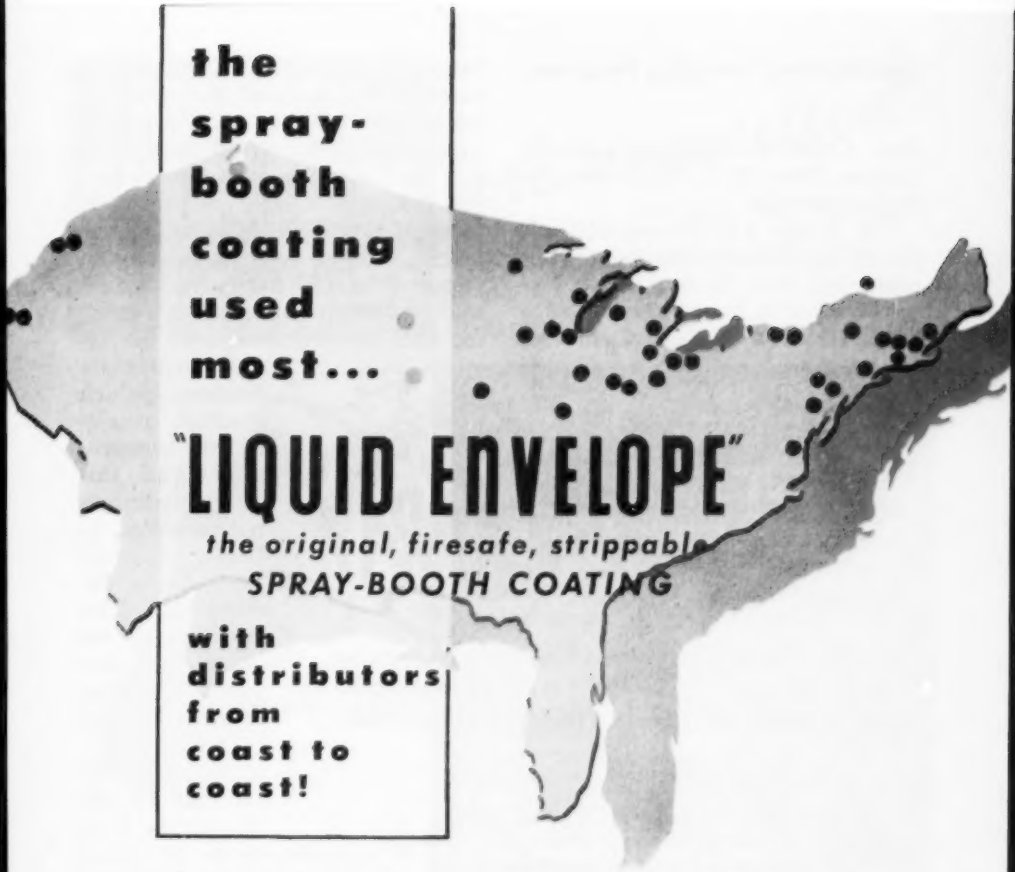
The effective protection of magnesium from corrosion has been a rather difficult problem, not only because of the high activity of the metal itself and the solubility of its usual corrosion products, but also because the alloying elements which must be added to magnesium to improve its mechanical properties tend to increase its corrosion rate. During the last thirty years many processes have been described for the protection of magnesium and these, in general, fall into two classes: (1) Electrolytic processes which use an alkaline solution and form hydroxide and carbonate films; (2) Chemical treatments in an acid dichromate solution. Cutting across this general classification is the

* Available from Allied Research Products, Inc., Baltimore 5, Maryland.

Dr. Seymour Senderoff
Supervisory Chemist,
Electrodeposition Section
National Bureau of Standards

•

A Monthly Digest of Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry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the original, firesafe, strippable SPRAY-BOOTH COATING
with distributors from coast to coast!

Thousands of gallons used coast to coast for over 10 years!

"Liquid Envelope" is the *original, firesafe, strippable spray-booth coating* . . . developed over a decade ago to "moth-ball" Navy ships and planes. Phone nearest distributor for 5-gallon test-sample at drum-lot price. See for yourself that *the original is still the best.*

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Dow Chemical Company's anodic process, Dow #17, which uses an acid electrolyte.

The Iridite #15 process falls into the second of these classes and like other processes in this group produces a film on the magnesium alloy which consists of hexavalent and basic trivalent chromium compounds together with salts of the metal being treated. In the normal treatment time of 15 to 30 seconds in the Iridite #15 solution, it is stated that less than 0.0001 inch per surface is removed from FS-1 sheet stock. The process, which operates near room temperature (70 to 95 deg. F.), is said to produce a more ductile coating than that obtained from the usual dichromate treatment which operates at elevated temperatures, and this softer coating is not observed to flake or spall when it is deformed. The structure of the coating is also said to differ from that usually found in chromate conversion coatings. Its color varies from dark to light brown, becoming lighter with increasing aluminum content of the alloy, and although unevenness of color is sometimes observed on die castings due to their non-uniform surfaces, corrosion protection is not necessarily affected.

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Phospray minimizes cleaning and eliminates rinsing and drying.

Phospray dries "dust free" immediately, ready for application of final finish.

Phospray can be cut with thinner as high as 3 to 1 without reducing effectiveness.

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for fast, clean-working

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The rigidly controlled uniformity of ATLANTIC COMPOUNDS helps you maintain your high finishing standards. This dependable uniformity is assured by the highest grade ingredients and by extremely close quality control in manufacturing.

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1860 BALDWIN STREET WATERBURY, CONNECTICUT

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Spotlighting Finishing Progress

Although chlorides are present in the processing solution, it is claimed that the solution is so formulated that retention of soluble chlorides in the coating is negligible. Measurements made after only perfunctory rinsing have shown soluble chlorides in the coating to be as low as three to four milligrams per square foot of surface. Since similar amounts were found in coatings prepared by the dichromate process, in which the source of the chlorides was impurities in the tap water or chemicals, the use of hydrochloric acid in the processing solution is not considered to be detrimental to the corrosion resistant properties of the film. Coated panels were exposed to thin films of the processing solution at full strength and in various dilutions for three months without any sign of attack on the panels.

Surface Preparation

As in all plating and coating processes, a clean surface is required for maximum effectiveness of the coating. In coating magnesium by the Iridite #15 process, mechanical cleaning by brushing with stainless steel brushes or sanding with aluminum oxide grits may be used without subsequent chemical cleaning only on very clean surfaces such as freshly machined parts that have no oils present. Sand, shot, or grit blasting must be followed by pickling, since these processes imbed foreign particles in the magnesium surface.

In general, oils and greases are re-

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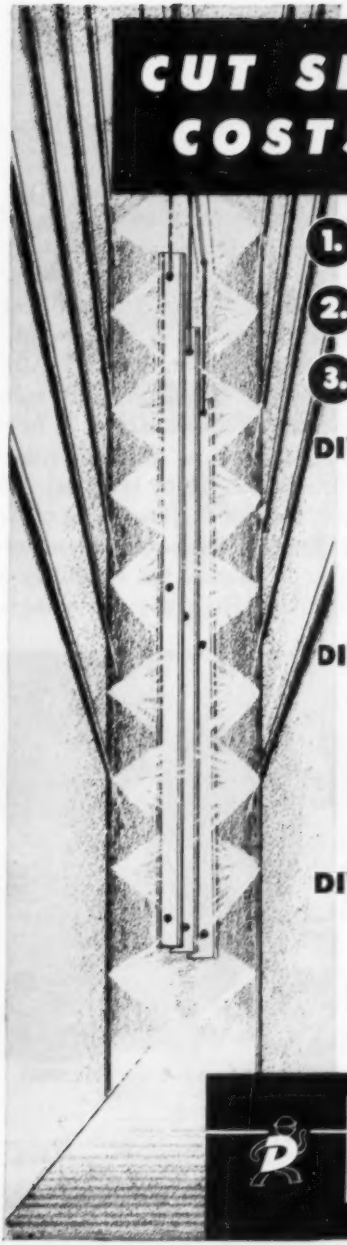

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3. CUT MAINTENANCE COSTS—DIVERSEY SPRAY-WASH COMPOUNDS PREVENT SCALE FORMATION, ELIMINATE STOPPAGES

DIVERSEY No. 519:

For use as a spray wash cleaner for all ferrous and nonferrous metals. Speeds up removal of identification inks, oils, drawing and buffing compounds. Free rinsing; leaves no white film; does not corrode. Rapidly removes tacky forming compounds.

DIVERSEY No. 14:

An alkaline compound for cleaning steel. High cleaning power at low concentration —with outstanding wetting, emulsifying and deflocculating ability. Solid particle dirt is "peptized"—suspended so that it cannot redeposit or adhere to work. Keeps screens, nozzles, jets and pumps free from scale.

DIVERSEY No. 16:

An emulsion-type compound for spray-wash cleaning all metals. Non-foaming, with excellent wetting and emulsifying powers. Rinses freely. When not rinsed leaves a light film that prevents rust during inspection or overnight storage. Paint can be applied directly over film.

THE DIVERSEY CORPORATION

1820 Roscoe Street, Chicago 13, Illinois

(In Canada: The Diversey Corporation (Canada) Ltd., Port Credit, Ont.)

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"—electrolytic cleaning . . . is followed by pickling in a chromic acid—sodium nitrate soluton . . ."

moved by solvent, emulsion, or vapor degreasing followed by soak or electrolytic cleaning in heavy-duty alkaline cleaners of the type that are used for steel. This is followed by pickling for a few seconds in a chromic acid—sodium nitrate solution for sheet stock, or a chromic acid—nitric acid—hydrochloric acid mixture for castings, and finally treatment in the Iridite #15 solution. Thorough rinsing between each step is required, and on work with mill scale or heavy metal particles rolled into the surface, a pre-pickling before the alkaline cleaner in which 0.005 to 0.002 inch is removed from the metal surface is required if best results are to be obtained.

Operation and Equipment

The coating solution is prepared by dissolving Iridite #15 powder in water to a concentration of 5 oz./gal., adding 7.5 fl. oz./gal. of 20 deg. Be' hydrochloric acid and one ml./gal. of wetting agent, ARP #2. After immersion of the work in this solution for 15 to 30 seconds at 70 to 95 deg. F., the pieces are cold rinsed and dried. Hot rinsing is undesirable since it may cause powdering of the film. Drying temperatures above 160 deg. F. reduce the solubility of the coating. High drying tempera-

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Finishing Problem?...

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If your product includes metal finishing in its manufacture, it is wise to consult the Watson-Standard Laboratories on your coating problems. The services of our laboratory and field technicians are available without obligation.

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tures darken the color of the film but are not found to perceptively decrease its salt spray resistance.

While this solution is said to be effective on most alloys, slight modifications have been found to give improved results with certain alloys. Addition of sodium hydroxide to raise the pH from its normal range of 0.2 to 0.6 to a range of 1.2 to 1.6 is desirable for coating the M alloy, while with zinc-zirconium alloys like ZK-60, the hydrochloric acid concentration should be reduced to one fl. oz./gal. The solution is controlled by checking the pH electrometrically and adding Iridite #15 and hydrochloric acid in the same proportions used in the preparation of the solution.

Tanks for the solution must be lined with acid-resistant vinyls such as Koroseal, Tygon, and others, or made from rigid plastics such as Lucoflex and Boltaron. Stainless steel should not be used. Heating is not usually required, but where necessary, silica jacketed immersion heaters or tantalum coils may be used. Special ventilation is said to be unnecessary because spray is suppressed by a light foam blanket produced by the wetting agent.

Evaluation of the Coating

The behavior of magnesium panels (FS-1 alloy) coated with Iridite #15 and with other dichromate treatments, both painted and un-

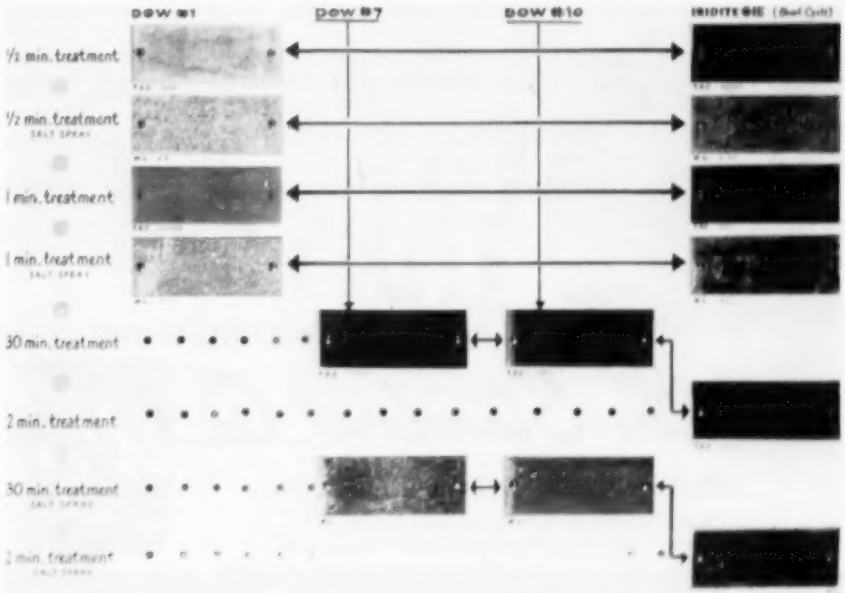

Fig. 1—Comparison Chart of Four Treatments for the protection of magnesium from corrosion.

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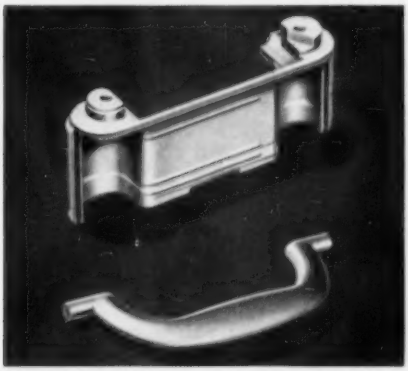
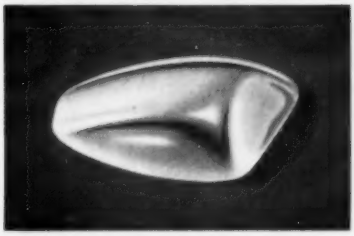
RESEARCH

New Honite "Micro Cut" Compound gives super smooth finishes on zinc and aluminum die castings!





Use HONITE "Micro Cut" Compound for Mirror Finish on Stainless Steel

On stainless, new "Micro Cut" Compound mirror finishes without darkening, preserving the metal's bright natural color. Impingement control prevents scratches and nicks—corner break is generated with NO dimension change.

Yes, now you can put a super smooth finish on zinc or aluminum die castings. New HONITE Brand "Micro Cut" Compound contains a brand-new, superfine, natural abrasive (exclusive with HONITE) which assures a smooth finish on every die casting. And HONITE "Micro Cut" Compound can cut the "extra steps" from your barrel finishing operation, too. You can eliminate extra rinsing . . . extra coloring . . . extra labor!

HERE'S HOW! On zinc or aluminum die castings, HONITE "Micro Cut" Compound gently and quickly polishes out surface imperfections without "skinning" or exposing porosity—*and* reduces impingement or nicking, because it holds the parts firmly in the chip mass during the run. You get a quality surface for quality plating on zinc die castings . . . a super smooth surface on aluminum die castings . . . with no need for extra rinsing or coloring!

Write today for a demonstration in your plant of HONITE "Micro Cut" Compound. Or write Minnesota Mining and Mfg. Co., Dept. FI-105, St. Paul 6, Minn., for free booklet: "Facts and Figures Report on HONITE Barrel Finishing", which contains complete information about HONITE compounds.

Honite BRAND

3M COMPANY

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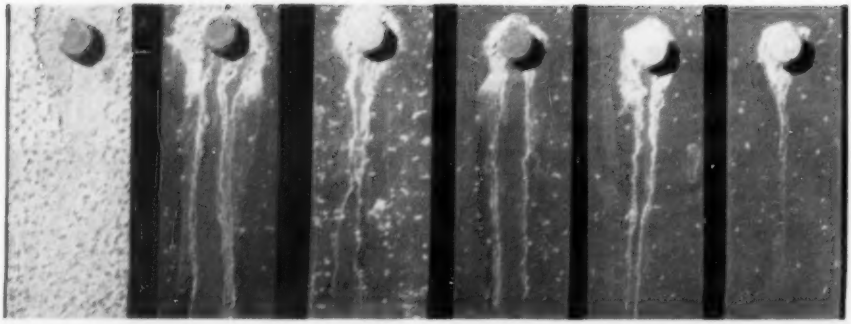

Fig. 2—Galvanic Corrosion Tests. (left to right): Panel 1, no treatment; all others were treated with Iridite #15. Bottoms used are: 1, plain steel; 2, plain steel; 3, zinc plate; 4, zinc plate; 5, cadmium plate; 6, cadmium plate with Iridite #1 Process treatment.

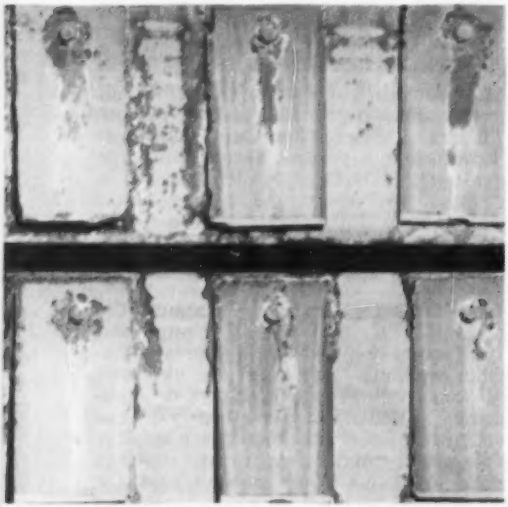

Fig. 3—Galvanic Corrosion Tests—Panels, (left to right): FS-1 magnesium untreated; FS-1 magnesium with dichromate; FS-1 magnesium with Iridite #15. Mounting strips, (top) 75 ST bare aluminum; (bottom) 75 ST aluminum with Iridite #14. Rivets used are 17S aluminum treated with Iridite #14. All of these panels were punched before treatment and painted with one coat of a zinc chromate primer before they were assembled. (Illustrations courtesy Allied Research Products, Incorporated, Baltimore 5, Maryland.)

painted were studied in salt spray, water fog, de-ionized water immersion, and outdoor exposure tests. Also, samples of coated magnesium were placed in contact with other metals to determine their behavior under galvanic corrosion conditions. In view of the large variance in such tests and the prohibitively large number of experiments that are required to give reasonable statistical reliability to the results of such experiments, the author does not attempt to give quantitative data. He finds that the paint bond was good in all coatings tested. Figure 1 shows a comparison of Iridite #15 with other treatments in the salt-spray test. The water fog test tended to emphasize the structure of the Iridite #15 coating and its ability to minimize pit-type corrosion. Figures 2 and 3 show the results of the galvanic corrosion tests and indicate, according to the author, that a relatively good conductor of electricity like the Iridite #15 coating cannot prevent galvanic corrosion, but it can reduce it, particularly when the

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IF solution decomposes

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POWERS **4**

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2. A tendency to spongy deposits.
3. Excessive evaporation.
4. Color variance.
5. Low cathode efficiency.

Too low a temperature can result in:

1. A low limiting current density.
2. Pale deposits.
3. Dark deposits.
4. Inclusion of foreign metals in the deposit (lower carat).

Write for Bulletin 330 (C-32S)

THE POWERS REGULATOR COMPANY

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For more data circle 154 on Reader Service Card

other metal can also be treated with the Iridite process.

Applications

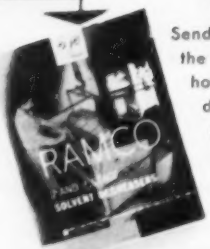
The author states that comparative corrosion tests have demonstrated that Iridite #15 is at least equal to Types II, III, and IV treatments in the Specification MIL-M-3171, and that the treatment time is as short as that of Type I with more protection and lower metal loss. As a result the Air Material Command has agreed to permit substitution of Iridite for the specification treatments in a sufficient number of installations to obtain pilot plant experience with this material.

Typical uses which have been made of the coating follow: (1) Electronics — Although the coating has high protective value it has low electrical resistance, a combination of properties which permits, for example, grounding of electrical components without removing the coating. (2) Optical Instruments—FS-1 sheet, when coated by the Iridite #15 process and dried at 300 deg. F. produces a nearly black non-reflective surface which has found application in certain optical equipment. (3) Paint Base—Use of this process is said to shorten processing time as compared to that required by the usual dichromate process. (4) Preparation for Structural Adhesives—The coating is said to give superior bonding in metal to metal and rubber to metal assemblies.

Q A

METAL PARTS CLEANING PROBLEMS?

Get the answers RIGHT from RAMCO'S new BULLETIN!



Send for your copy of the Ramco Bulletin. See how Ramco 2- and 3-dip degreasers can solve your metal parts cleaning problems safely, efficiently, economically! Send today!

RAMCO EQUIPMENT CORP.
DIV. OF RANDALL MFG. CO., INC.
811 Edgewater Road, New York 39, N. Y.

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If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity —

Try Us!

We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

The Varnish Products Co.
5204 Harvard Avenue
Cleveland, Ohio

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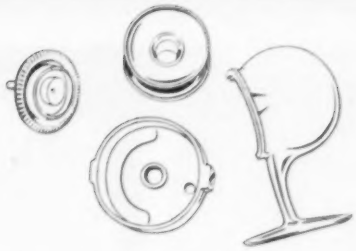
Another field report on "TRICLENE"® D



HIGHLY POLISHED PARTS of the Airex spinning reel are made from five different metals. To clean them all quickly and thoroughly takes just a single degreasing operation with All-Purpose TRICLENE D.

AIREX–fishing reel manufacturer–finds: TRICLENE® D gives brighter cleaning...cuts degreasing time in half

BRIGHT, THOROUGHLY CLEAN aluminum-zinc die castings are removed from the vapor degreaser at Airex Manufacturing Co. TRICLENE D is used by Airex to give fast, trouble-free degreasing.

Airex Manufacturing Co., of Hillside, N. J., uses parts made of five different metals in its popular spinning reel—aluminum, brass, copper, steel and zinc. Many of the parts are highly polished. Originally, some degreasing operations had to be carried out twice to assure thorough cleaning.

When Airex changed to TRICLENE D trichlorethylene, they substantially cut their degreasing time. *In a single operation,* Du Pont's efficient new solvent gives them the thorough, safe, trouble-free degreasing they need. And TRICLENE D cuts maintenance costs, too: Adjustment of solvent pH is no longer necessary... and the time between degreaser cleanouts is now six to eight weeks instead of two.

Locked-in stabilizers give TRICLENE D unsurpassed resistance to *all* major causes of solvent deterioration—heat, light, air, acids and aluminum chloride—yet this rugged solvent contains nothing to harm even delicately machined metal surfaces. TRICLENE D retains its original high purity longer . . . continues to give *brighter cleaning of any metal,* job after job, distillation after distillation. And remember, it costs no more!

FOR MORE INFORMATION about TRICLENE D and how it can bring a new standard of efficiency to your vapor degreasing operation, write to the nearest District Office of the E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

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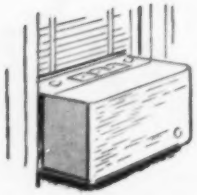
...THROUGH CHEMISTRY

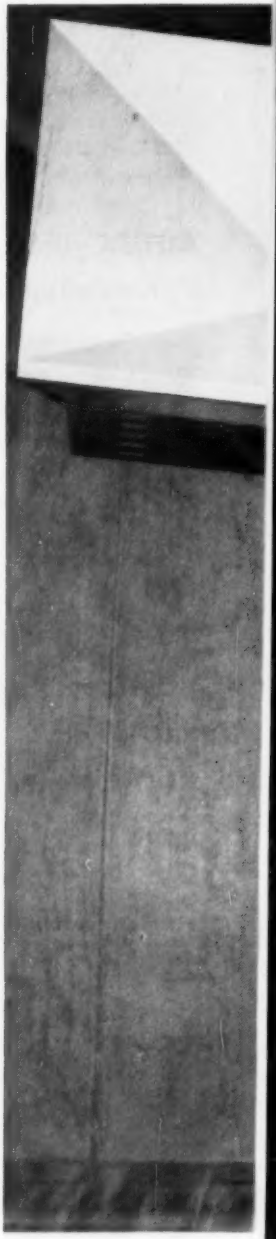
TRICLENE® D

TRICHLORETHYLENE

For more data circle **157** on Reader Service Card

PERMANENT BEAUTY—





In developing finishes for the International Harvester air conditioner, Glidden formulators faced a double problem . . . the inside and the outside.

The room side of the unit is protected by one type of Glidden NUBELITE* against damage by impact, abrasion and humidity. The weather or exterior side receives protection from rain and sun by a second type of NUBELITE formulation and a totally different finishing schedule.

Glidden Technical Service can assist any manufacturer with finishing or application problems and Glidden can supply the most suitable finish formulations.

*A Glidden Trade-Mark

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INDUSTRIAL FINISHES DIVISION
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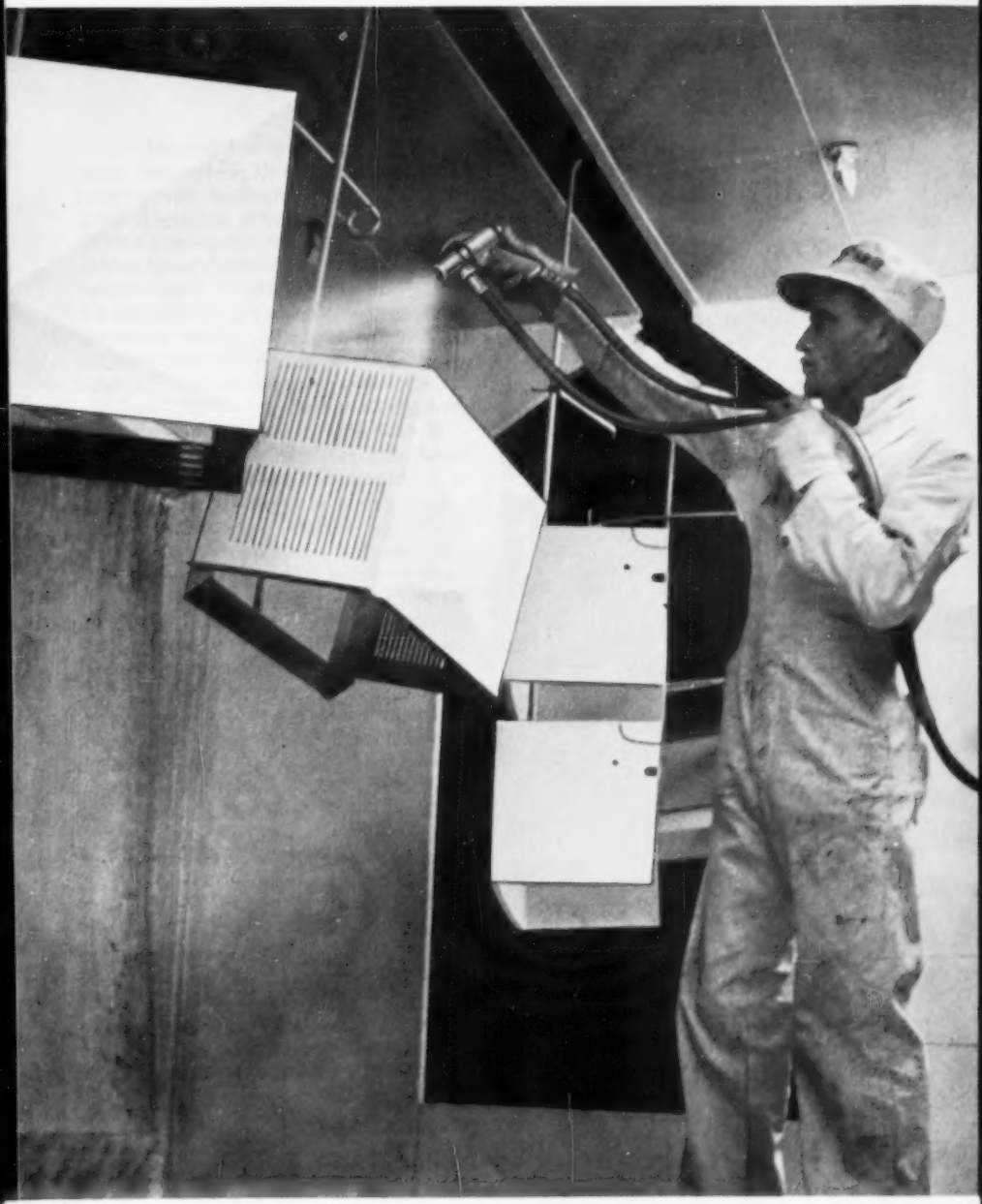

Finishing Unit Features Versatility and Speed

RADIO PRODUCTION can normally be scheduled in quantity lots such that there is ample time for fabrication and finishing operations. However, when emergencies, such as rush orders for special models, do arise in the plant of Automatic Radio Manufacturing Company, Inc., Boston, Mass., the finishing plant can deliver painted cases or other parts to the assembly line just 15 minutes after the parts are formed.

Fig. 1—Metal parts are sprayed and hung on the finishing conveyor, which, as can be noted, passes directly behind the spray booths.

Steel radio cases, parts, and cases for electronic equipment are formed and degreased prior to finishing. Shop trucks are used to transport parts to the finishing department. The paint finishing setup consists of three water wash spray booths (Fig. 1) and an infra-red oven. An overhead conveyor with hangers set on 6-inch centers transports sprayed parts to and through the oven.

Metal radio cases are generally finished with one coat (in various colors) of a "hammer" finish. With the setup shown, as many as six different finishes can be available for use on short notice. Three sprayers can produce parts with three different finishes simultaneously. Sprayed parts are hung on the conveyor which passes just behind the spray stations, and the finish has a chance to set up during a 5 to 10 minute travel from spray booths to infra-red oven.

Finish baking is accomplished during a 5 to 9 minute travel through the infra-red oven shown in Fig. 2. The oven, product of Fostoria Pressed Steel Corp., Fostoria, Ohio, is 22 feet long, 6½ feet high, 41 inches wide at oven center, with a radiant zone 18½ feet long. The oven has an operating load of 75 kw. The temperature in any baking zone can be controlled to produce the desired baking temperature-time cycle. Baking usually takes place between 300 and 375 deg. F. depending on the conveyor speed (widely variable) and the kind of finish being sprayed.

Sprayed and baked radio cases are

generally unloaded at the oven exit area, but can be allowed to stay on the conveyor until it returns to the spray area if such a system is advantageous from a production schedule standpoint. With the close spacing of the conveyor hangers, the finishing system will produce parts almost as rapidly as they can be sprayed.

Automatic Radio, since 1920, has been a leader in the radio manufacturing field, producing custom-built automobile radios, home radios and portable radios. During World War II and the Korean War, military equipment was produced. On two separate occasions, the Army and Navy "E" was awarded to the company. The production and engineering skill that made possible those awards is now being applied to the manufacture of high quality products for the consumer market.

For more data circle 1 on Reader Service Card

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

For further information on any product mentioned in this issue—use READER SERVICE CARDS inside front cover.

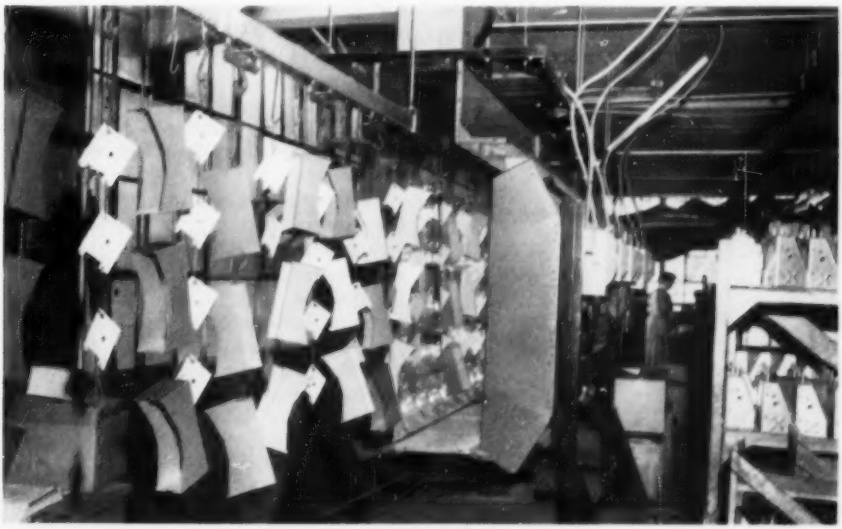

Fig. 2—Metal parts for electronic equipment are spray finished with a "hammer" finish, "set up" during conveyor travel from spray booths to oven, and baked to form an attractive film in the 18-foot heat zone of the Fostoria infra-red oven. (Photos by PRODUCTS FINISHING)

Schick Solves Problem in Polishing Shaver Heads

IN REMOVING BURRS and polishing thin metal parts on an automatic buffing machine, it is frequently difficult to avoid nicking and denting work surfaces. Added to this problem is the constant fear of fires caused by overheated buffs and brushes.

Schick, Inc., Lancaster, Pa., manufacturer of electric shavers, was troubled for over two years by these problems in cutting and polishing shaver heads. Recently, a buffing wheel, built especially for Schick by Hanson-Van Winkle-Munning Co., Matawan, N. J., licked both problems for the company.

The wheel is made up of a cloth buff and a specially constructed Tampico brush, arranged in alternate layers. Two such "combination" wheels are used in the Schick operation.

How New System Reduced Costs

Schick cuts and polishes shaver heads with wheels made up of five H-VW-M Stap-L-Bond Tampico brushes, and five H-VW-M Binderized Ruff-L-Buffs each (Fig. 1). They are 12 inches in diameter and have an arbor hole of 1¼ inches.

Fig. 1 — Buffing wheel used by Schick is made up of alternate Stap-L-Bond Tampico brushes and H-VW-M Binderized Ruff-L-Buffs.

Fig. 2—Automatic buffing machine for cutting and polishing shaver heads is run by two operators. One operator places heads on the arbor of the holding fixtures, two heads per arbor. The other removes them after buffing.

When pressed tightly, the Tampico brushes are about ¼ inch thick on the rim and about ½ inch thick at the center. Because they are thicker in the center than at the rim, the brushes act as spacers between the buffs. This arrangement provides greater flexibility and improves ventilation for the wheel —which means a cooler operation.

Two other factors assure a cooler running wheel: the ventilated construction of the brush-buff wheel and the impregnation of the buff cloth. The individual sections have six holes punched in their fibre-board centers and 12 air channels stamped on the outer rim of the centers. During operation, air is

Fig. 3—Buffing head in action. Two shaver heads have just passed under the second buffing wheel. Device in foreground will trip handle of the holding fixture and unlock arbor, allowing operator to remove shaver heads.

How It Works

Three people run the automatic buffing machine, which is of standard design. One operator loads the heads on the arbor (Fig. 2) of the holding fixture, two heads per arbor. Another operator takes them off after treatment.

The third operator is responsible for the quality of the finishes. He examines sample heads under a microscope (Fig. 4) and makes adjustments to the machine, buffing head and composition applicator, as the occasion demands. After the wheels have been broken in, he examines shaver heads about every 15 minutes. As the wheels wear down, the work is inspected more frequently.

This operator is also responsible for breaking in new wheels. After being set up, wheels are good for 16 hours (two shifts). As for maintenance, a third-shift man cleans the fixtures every day.

The new combination buffing wheel has considerably reduced dents and scratches, and thus has cut down on rejects proportionately.

For more data circle **2** on Reader Service Card

force-circulated over the numerous ruffles of the buff and through the strands of Tampico.

In addition, the Binderized Ruff-L-Buff is impregnated with an organic grease-like material, similar to that used as the binder in buffing compounds. Besides giving longer life to the buff, the binderizing holds frictional heat down and permits a cooler operation, thus reducing fire hazard.

Forming a natural bond between buff and cutting compound, the impregnated "binder" permits thread ends to "take" compound more quickly and to retain it more effectively and in larger quantity. The more compound carried, the less frequently are additional applications required, and the faster the cutting action.

Fig. 4—Inspecting shaver heads under a microscope. After examination of the head, operational adjustments are made as necessary.

Beech Aircraft Eliminates Scratching, Improves Finishing Process

Beechcraft Bonanzas have better paint jobs these days—harder, longer lasting, glossier and smoother—thanks to the plant-wide efforts of Beech Aircraft Corporation's "Bonanza Factory." The better finish is the result of improved painting technique, revised fabricating and assembly methods, and the increased care and attention given the manufacturing operations by plant personnel.

In their effort to improve the already satisfactory finish applied to the Beechcraft airplane, technical service men in the field of paint application were called in. They advised that hot spray equipment be installed. By reducing the viscosity of paint with heat rather than

Fig. 1—Beech Aircraft paint shop foreman shows Spee-Flo hot spray unit used in painting Beechcraft Bonanza airplane bodies. The heating unit can be seen under his hand.

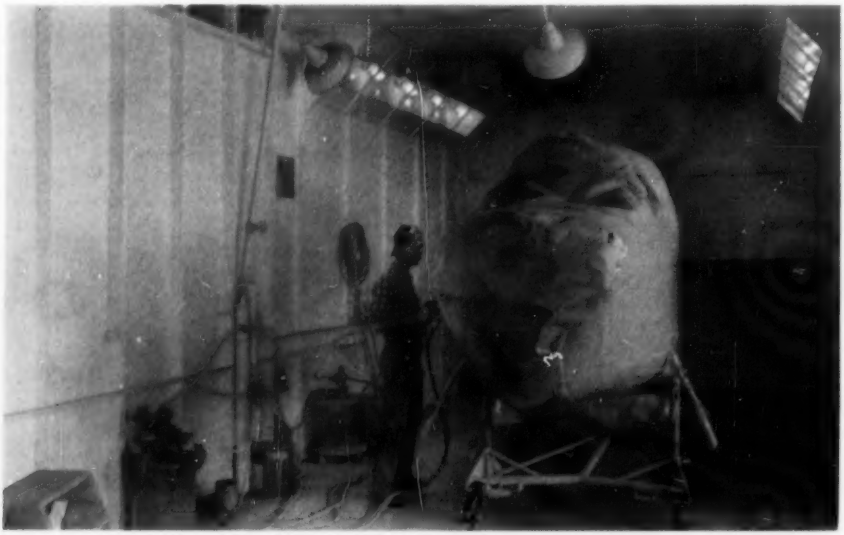

Fig. 2—A view of the spraying area for fuselages. Note lights used to improve illumination.

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7073 addition agent. For muriatic and sulfuric acid pickling solutions.

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C42 and B4M bright addition agents. Permits current densities up to 200 amps per sq. ft. Improves conductivity for excellent distribution of fine grained, high luster, durable deposit.

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PROSEAL 9 and 2B leach . . . Easy and inexpensive to use and provides maximum control over uniform application of film in full bright or bronze phase.

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For more data circle **159** on Reader Service Card

thinners, they said, more paint could be applied in a single pass of the spray gun. It has less tendency to run or sag, as it thickens rapidly upon hitting the surface and cooling. With less solvent to evaporate, the paint dries faster, too. The results of the installation (Fig. 1) were excellent: a heavier, tougher coat of paint with improved gloss was obtained and less time was spent in spray painting the Beechcraft airplanes.

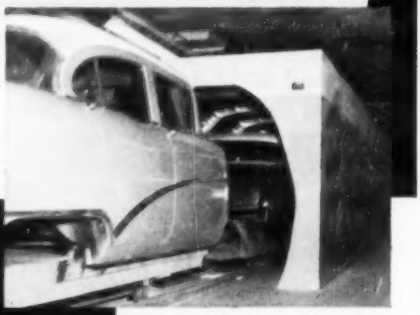
The paint application experts also recommended that illumination be improved in the fuselage spray section. Accordingly, this operation was moved over to a window, and large spotlights were installed (Fig. 2). Light has been increased by three times in this room. "Orange peel" and rough spots in the finish, which might have gone unnoticed until final inspection, have all but disappeared.

The other major problem being encountered at Beech Aircraft was that of scratching and damage to the finish, which occurred during fabrication and assembly of the plane.

Two courses of action were taken to eliminate mars, scratches, and subsequent retouching. First, the plant manager and his assistants analyzed the painting operations, and assigned a specific point in the process where each part would be painted. This meant retooling in some cases. To be able to trim the wings prior to finishing and still have them fit the fuselage after painting, without additional trimming and fitting (practices which

LEADING AUTO MANUFACTURERS INSTALL CLEPCO QUARTZ OVENS

• Finds CLEPCO Quartz Paint Ovens require half the floor space and half the KW input of infra-red bulb ovens.



HERE'S WHY...

CLEPCO Quartz Paint Ovens are based on the use of special CLEPCO Quartz Heaters designed to emit that part of the heat spectrum most readily absorbed by paints.

Another major auto manufacturer reports that CLEPCO Paint Ovens are lower in original cost as well as in operating costs than the conventional gas fired convection ovens previously in use.

CLEPCO'S Complete Research Facilities are at your service to determine the most efficient quartz oven for your requirements.

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CLEPCO

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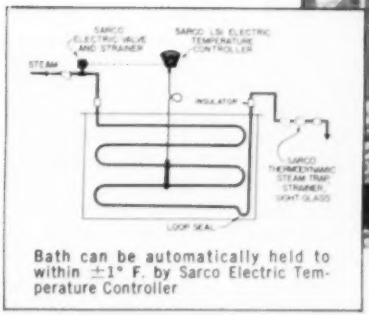
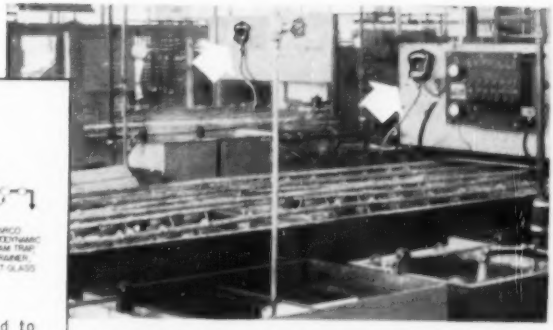


Bath can be automatically held to within ±1° F. by Sarco Electric Temperature Controller



Plant of Regal Plating Co., Inc., Providence, R. I. where 32 electroplating tanks are equipped with Sarco LSI Electric Indicating Temperature Controllers.

How low-cost Temperature Control ended "blue haze," pitting, burning

Regal Plating Co. now gets high quality plating with minimum of rejects

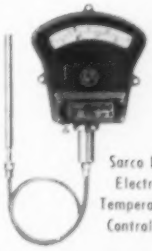
This well-known job plater specializes in high quality plating of costume jewelry and fishing lures. During an expansion program management ordered the elimination of these common plating difficulties: blue haze on nickel plate, pitting of copper plate and burning of sharp points.

These troubles were due to creeping bath temperatures . . . the result of *manual* temperature control, which is always unreliable.

To solve these problems and step up efficiency, Regal installed Sarco LSI Electric Indicating Temperature Controllers on all 32 plating tanks. Result: above troubles completely eliminated, rejects greatly reduced, no more burnishing of nickel plate.

Investigate the advantages of Sarco Temperature Controllers. Write for Handbook No. 6 or consult your Plating Supplies Jobber. Sarco Company, Inc., Empire State Bldg., New York 1, N. Y.

SARCO *improves product quality and output*



Sarco LSI Electric Temperature Controller

A COMPLETE SYSTEM FOR AS LITTLE AS $130 A TANK!

Accurate to ± 1° F. Simple. Dependable. Easily installed.

Easy-to-read controller dial indicates temperature being maintained. Temperature setting quickly changed by turning one knob.

2159-B

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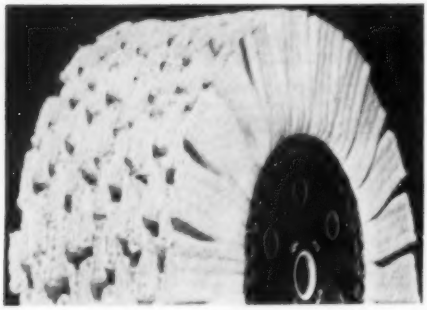
NEW TYPE

SISAL

Churchill Finger-Buff*

#44 D.O.W.



This brand new type #44 D.O.W. Churchill Sisal Buff is engineered to give maximum cutting and coloring results with no streaking. Each section is made with the *original* Churchill staggered finger-type construction, no other manufacturer can duplicate. The #44 D.O.W. Sisal Buff combines the highest quality 86/93 bias-cut new cotton cloth with imported bias-cut sisal cloth . . . truly rugged, thru and thru!

- Churchill Finger-Buffs* are competitively priced. Produced in all sizes from 6" to 18" diameters. For complete information write your problem.

*Churchill Finger-Buff, T.M. Reg. U.S. Pat. Off.

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FREE Catalog

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Please send me FREE Catalog and complete information. My special buffing problem is .....

Name ..... Title .....

Firm .....

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City ..... Zone ..... State .....

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cause an ugly scratch on the plane), special tooling had to be installed.

The second part of "operation scratch elimination" was to trace the inadvertant scratches to the source and eliminate them, and to stop any practice which might possibly cause a scratch. Thus all the tool boxes and felt pads were removed from the wings, which were no longer to be used as work benches. Not even a paper clip or an inspector's clip board was to be placed on a painted surface.

Every surface of each Beechcraft is "babied." Men are stationed at each wingtip to steer the plane down the assembly lines.

The results have been excellent. With good cooperation from employees, the rework and retouching has almost ceased to exist. Polishing the finished airplane's painted surface has also been discontinued. Paint authorities recommended that a period of several months be allowed to elapse before the first coat of polish was applied.

Not only is production helped by the elimination of time required to do the actual retouching, but the original paint finish, which is applied under conditions almost certain to be better controlled than the retouching operations, is a superior product too.

For more data circle 3 on Reader Service Card

★ ★ ★

Applications for Pressure Sensitive Tapes in Metal Finishing

WITH THE GROWTH of quality control requirements and the continued improvement of the pressure sensitive tapes, the use of these materials in their various forms has taken on increasing importance in the finishing in-

MEET "LITTLE STEVE," A NEW, SPACE SAVING, LOW COST AUTOMATIC PLATING AND IMMERSION PROCESSING MACHINE

Here's What "Little Steve" Can Do

- ELECTROPLATING
- ANODIZING
- BLACK JAPANNING
- ENAMELING
- ELECTROTYPE PLATING
- PLASTIC COATINGS
- HARD CHROME PLATING
- PHOSPHATE COATINGS

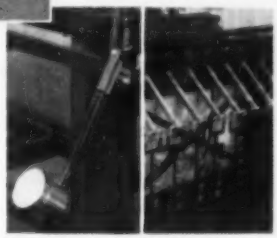
UP TO 40,000 PIECES PER DAY
540 RACKS PER HOUR

Yes, this new immersion processing machine by Stevens can process up to 40,000 pieces per day – and it has a variety of other uses too.

Ruggedly built "LITTLE STEVE," the hit of the 4th Industrial Finishing Exposition, can be obtained at a surprisingly low initial cost. It is ideal for large or small companies for it will fit many production cycles. It uses an arm as a rack or will take racks for small parts.

Being of small size it offers no floor space or load problems; involves low solution expense and means a small capital investment. It can be used easily as a laboratory testing machine.

For further information about "LITTLE STEVE" write for illustrated folder or call your local Stevens sales engineer.



A single part can be placed on each carrier arm as shown in the illustration above or racks of numerous parts can be used.

If a larger production model is desired the "Big Steve" unit using the same basic design, will provide the answer.

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Metal Finishing equipment and supplies from castings or stampings to finished product

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INCORPORATED
YOUR METAL FINISHING SUPERMARKET
DETROIT 16, MICHIGAN

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dustry. Utilization of the adhesive backed tapes has grown in finishing operations as well as in the auxiliary operations, such as packaging products for shipment, materials handling, and plant maintenance.

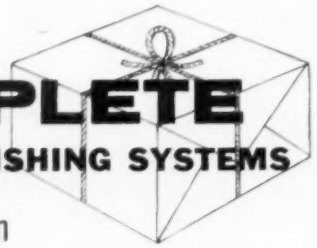
In finishing processes, pressure sensitive tapes are used in grinding and polishing, electroplating, painting, and as a protective coating during transfer and storage.

A pressure sensitive tape with adhesive on both sides is widely used in applying sanding discs to face plates. The liner is removed from one side of the tape, exposing the adhesive. This side is attached to the back of the sanding disc. The other liner is then removed and the adhesive on this side is used for attaching the disc to the face plate of the sanding machine.

Adhesive backed tape is helpful in preventing damage to soft metals which must be held in a vise during processing. It is used to "double coat" a resilient padding to the jaws of the vise.

Appearance of grained surfaces produced by grinding is made neater by the proper use of masking tape. Where the grain meets at right angles on the corner of such a surface as the edge of a tank, tape is carefully placed diagonally across the corner while the surface is ground in one direction. The tape is then removed and attached on the other side of the diagonal; the grain

CALL HOFFMAN



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ENGINEERED FINISHING SYSTEMS

assured performance on
metal parts cleaning—surface treating—painting or plating

If your plant needs a *dependable* mechanized or automatic finishing system to deliver full scale production . . . engineered and installed with minimum complication, to operate with maximum efficiency—then call in HOFFMAN engineers.

Whether it's a single stage manual unit—a multistage conveyor sequence of wash-pickle-chromic acid sprays—an automatic air-operated immersion process—or an electrostatic paint or enamel system . . . HOFFMAN systems are engineered to meet every requirement.

And Hoffman does the *whole* job—*all the way!* From specifications and blueprints through equipment fabrication and assembly to a working installation on assured production basis, you know one firm is responsible for everything! So call in the Hoffman engineer—to answer all your finishing problems.

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For more data circle **164** on Reader Service Card

Lesson for today: How Fosbond locks paint to metal

Even when the heat's on, the Nesbitt ventilating and heating units in this modern Abington Township, Pa., school keep their smooth handsome finish. Thanks to the Fosbond® precoat, the paint resists the wear-and-tear of small-fry on the rampage . . . as well as the variations in temperature.

Fosbond anchors the paint to the metal. After bonding itself firmly to the metal, the Fosbond coating presents a uniform surface of microscopic "teeth" which lock on the organic finish for lifetime adherence and protection.

Since John J. Nesbitt, Inc., adopted Fosbond, the company has not had one reject for paint adhesion. Cleaning and coating costs have been reduced.

If you use organic finishes on your product, you should know the full story of the Fosbond Process. Investigate the advantages of affixing the Fosbond-Good Housekeeping emblem to your products now.

A free, one-hour survey of your finishing processes may make it possible for you to add more sales-appeal and lasting good looks to your products.

SEE US AT BOOTH 1272—METAL SHOW—PHILA.

Write: Customer Service Dept., Pennsylvania Salt Mfg. Co., Three Penn Center Plaza, Phila. 2, Pa.

Pennsylvania Salt Manufacturing Co.

For more data circle **165** on Reader Service Card

is produced at a right angle to the first grain, and the two meet in a neat line. Similarly, the tape is used when grinding welds to leave a definite, smooth, finished strip on the surface. Masking tape is placed on each side of the weld, and the grinding is limited to a neat strip.

For electroplating, tapes have been developed which successfully resist the action of cleaning and electroplating solutions, and provide positive protection for surfaces which are not to be plated. Tapes for this purpose are made very pliable and conformable, thus making it possible to mask even irregularly shaped objects. And since they follow contours so well, plating solutions cannot creep under the surface of the tapes to leave a ragged edge—straight lines are assured.

A lead backed tape developed for electroplating has proved very valuable where a "thieving" action is desired. Thus, where a sharp line is necessary, such as on a corner or edge, the lead backed tape is applied, the whole surface may then be wax coated, and the wax then scraped off the areas which are to be plated. After the plating, wax and tape are removed, leaving a clean, sharp line. The lead backed tape has prevented excessive deposits on the edge, where current density is high. **This lead backed tape** is also useful in plating very small areas. These are difficult to plate because of the difficulty encountered in reducing the current density to the proper level for the job. The lead backed tape furnishes additional metal area on which the deposit can be formed. Even very irregularly shaped objects, such as saw toothed articles may be successfully masked with this tape.

Vinyl plastic tapes are available which have very good chemical resis-

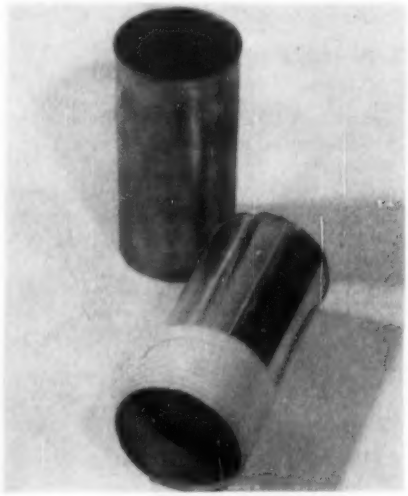

Fig. 1—Metal sleeve in the foreground is wrapped with 3M Masking Tape No. 209 prior to immersion in a copper plating bath.

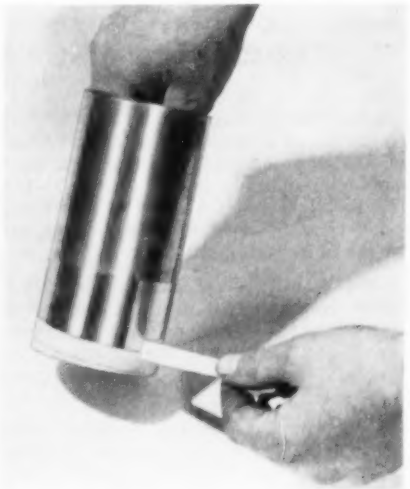

Fig. 2—Masking tape being removed from metal sleeve after plating, showing straight edge of plated metal obtained in this way.

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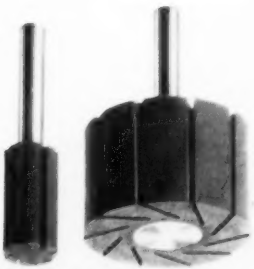
With Chicago Rubber's NEW

COSMO EXPANDER WHEEL

You'll get faster grinding • Better work
Longer belt life • Easier trouble-free performance
Instant abrasive change • No down time



Cosmo Expanders up to 2" diameters available with ¼" mandrels for hand tools. Larger sizes up to 8" diameters—arbor hole type only. Specials to your specifications.

This brand new slotted rubber Cosmo Expander wheel cuts down high shop costs and valuable time. It's easier to operate and will allow you to get all the usable life out of your abrasive bands and sleeves. To change bands—no tools necessary. Slip it on and the centrifugal force exerted by this wheel holds the abrasive element tightly with no possibility of slipping—replacement becomes a matter of seconds. And what's most important, you will instantly notice a vast improvement in quality—the higher degree of resiliency in the Cosmo Expander will give you the best work you've ever done. You can't miss. Write for descriptive literature today.

"REMEMBER, IT'S THE WHEEL THAT DOES THE WORK"

CHICAGO RUBBER COMPANY, INC.

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For more data circle 166 on Reader Service Card

Practical Applications

Fig. 3—Propeller shafts for aircraft engines are quickly and easily masked with No. 420 tape prior to a critical plating operation. The lead foil backing effects a "thieving" action that reduces edge build-up to the minimum.

tance. These are useful in masking the racks which carry materials through processing. Racks are successfully protected from alkaline cleaners, acids, and organic solvents with this tape. Care should be taken when applying the tape to be sure that the last inch or two of tape has adhered to the backing of the tape just above it. This assures a positive seal, which will withstand most solutions.

Highly polished parts that are to be plated are masked to protect them from scratching as well as the plating solution itself.

Masking tape has been used as a selective or stop-off masking medium for many years in the paint finishing industry. Applications continue to grow with the introduction of improved tapes, tapes for special purposes, and new methods of using and applying the tape. As anodized aluminum became more popular, for instance, a tape was developed for adhering instantly and securely to such treated surfaces.

Die cut tape for special applications is being made by a number of manu-

Fig. 4 — Anodized aluminum castings are masked with No. 214 high heat masking tape prior to spraying baked-on finish. Tape was developed for masking treated metal surfaces.

Fig. 5—Tape No. 470 is used to protect portions of large metal castings from exposure to the solution. Despite the rough surface, the tape will hold during the entire operation.

KIRK AND BLUM
INDUSTRIAL OVENS

for CONVEYORIZED PRODUCTION

for BATCH PRODUCTION

for TESTING or LABORATORY

Specially designed to solve your problem . . . KIRK & BLUM Ovens meet all needs for drying, baking, dehydrating or other more specialized requirements.

Often Kirk & Blum Ovens up to freight car size are shipped completely assembled, tested and ready to operate. Then, they can be connected and in use in a few hours, saving time and expense. Illustrated are typical installations which show the wide range of KIRK & BLUM experience over more than 47 years.

If you have an oven application, discuss it with a KIRK & BLUM Engineer. There's no obligation. Write for free literature.

THE KIRK & BLUM MFG. CO.,
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KIRK AND BLUM
INDUSTRIAL OVENS

"Even plant maintenance and safety are aided by these adhesive backed tapes."

facturers, and a machine for delivering such tapes on a split liner to facilitate removal and handling is being marketed. Die cut tapes are used in masking openings and apertures in housings during paint spraying and baking.

The most common use for masking tape in painting, of course, is in selectively masking areas so as to apply a design. This is done by masking off small areas not to be painted, with masking tape alone, or with masking tape being used to attach sheets of paper, so as to mask off large areas. When large sheets of paper are used for masking, a device for edging both sides of a roll of paper is a helpful accessory. This device is called an apron taper. Identification marks on articles to be painted are also masked by tape.

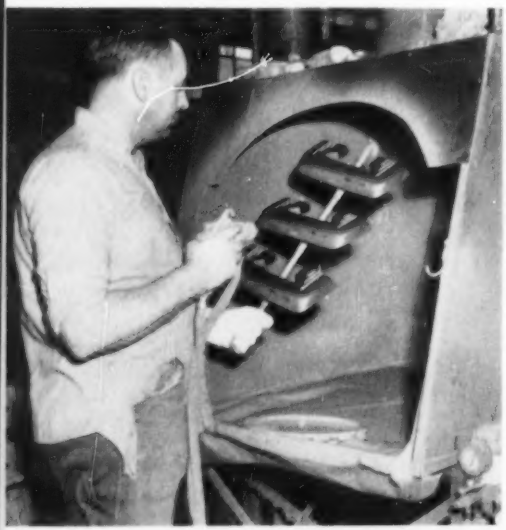

Fig. 6—Narrow strips of "Scotch" Brand Masking Tape No. 214 are applied to typewriter covers for spray painting and baking. Tape leaves sharp design. (Photos courtesy Minnesota Mining & Mfg. Co., St. Paul, Minn.

In the field of packaging and shipping, the tapes are widely used for protection and neat appearance. Tapes are often applied during fabrication and allowed to remain on the product right up to the time of delivery to the customer. Tape protects articles from dust and dirt, as well as scratching during handling. Thus highly polished surfaces retain their original beauty up to the time of delivery without danger of being marred in handling. Tapes are also used in bundling a number of articles which are to be shipped together, such as pipes and tubing, and in sealing shipping cartons and materials.

Materials handling is also aided by pressure sensitive tapes. Palletized materials are held together during storage and moving by bands of tape encircling the stacks, thus helping to avoid damage caused by articles falling or being knocked from the stack.

Even plant maintenance and safety are aided by these adhesive backed tapes. By marking off lanes and storage areas with brightly colored strips of tape applied to the floor, the plant is kept neater, and materials are kept in definite areas, where they can be found. Danger areas can be defined by marking them with a series of tapes, run diagonally, so as to be seen clearly. Strips of abrasive materials with an adhesive backing may be applied around machines, on cat walks, and on any area where there is danger of falling. They are resistant to oil, water and grease.

A catalog describing in detail many applications of pressure sensitive tapes may be obtained from the Minnesota Mining & Manufacturing Co., St. Paul 6, Minnesota.

For more data circle 4 on Reader Service Card

LARGE corrosion PROBLEMS

Perma-Line builds and lines tanks for plating and acid handling

SMALL corrosion PROBLEMS

Acid - handling valves — rubber and Plastisol lined and plastic type valves

FIELD corrosion PROBLEMS

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POLISHING

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New • EQUIPMENT • MATERIALS • PROCESSES

Corrosion-Resistant Coating

A two-coat vinyl base system formulated for use under adverse environmental conditions has been announced by Better Finishes & Coatings, Inc.

"Liquid Envelope" vinyl-base Red Lead Primer No. 41-01 has excellent resistance to acids and alkalis, it is stated. It features impermeability, low moisture-vapor transmission, flexibility, and good adhesion when properly applied. Components include non-reactive vinyl fortifying agents, plasticizers and resins in a ketone vehicle.

This corrosion-inhibiting primer can be used to advantage on steel in areas exposed to severe conditions of humidity, acid and alkaline fumes, mists, vapors or liquids. It can be used as a shop coat on machinery and equipment which is not to be finish-coated for several months. Brush coat drying time to touch is ½ hour, to re-coat 24 hours; spray coat drying time to touch is ½ hour, to re-coat 2 to 4 hours.

"Liquid Envelope" finish coat No. 42-00 is a vinyl-based finish having good impermeability, weather resistance, gloss and color retention properties. It is compatible with "Liquid Envelope" No. 41-01 Primer as a two-coat corrosion-resistant system. This finish coat contains vinyl resins, plasticizers, modifying agents and color pigments. These components show no tendency to separate or stratify under a temperature range of 0 to 120

deg. F. Drying time to touch is one to two hours; thorough dry is 18 hours.

Technical data and samples may be obtained from Better Finishes and Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

For more data circle **5** on Reader Service Card

★ ★ ★

Mesh Abrasive Cloth

An abrasive cloth for sanding and polishing applications has been announced by Bay State Abrasive Products Company, Westboro, Mass., in conjunction with the Amerotron Corporation, New York, N. Y. Amerotron weaves the rayon cloth mesh, and Bay State applies the abrasive particles to the cloth and markets the material as "Gritcloth."

The rayon material is covered on both sides and through its mesh openings by abrasive particles of aluminum oxide or silicon carbide. The grits are bonded to the cloth by a waterproof resin.

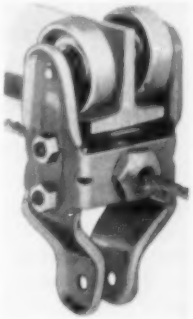
Prime advantage of these coated abrasives is that they permit the passage and elimination of sanded particles through the open pores. This feature is especially helpful in sanding aluminum, which has a tendency to "load" coated abrasives rather rapidly.

Gritcloth is availables in sheets, discs and rolls in a wide variety of grits.

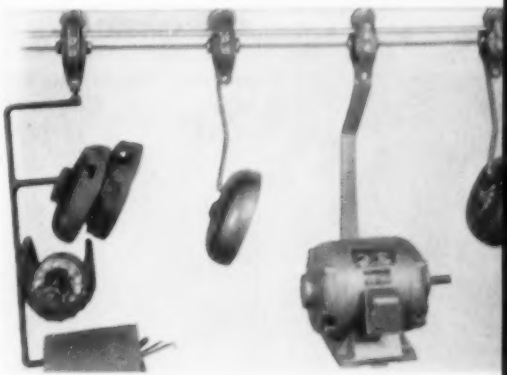
For more data circle **6** on Reader Service Card

Cable Conveyor

Tipp "Cable-Way" Conveyors are cable-type systems capable of handling up to 250 pounds per hanger. The continuous conveyor track is prefabricated T-rail, with all-bolted construction. Trolleys are available in 80, 150 and 250 pound capacities. The heavy duty trolleys have grease fittings. The lighter capacities may be lubricated by a solenoid - operated automatic oiler.



Close-up View of Tipp Cable Conveyor



A variety of objects being transported between operations on a Tipp Cable Way Conveyor

New Materials, Processes

Graphite bearings and Oilite bearings are used to meet specific needs. The electric drive is available with fixed or variable speeds. A friction clutch is optional on the drive unit.

These conveyors, made by Tipp Mfg. Co., Tipp City 9, Ohio, are easy to install or rearrange. The T-rail track and cable are light in weight. Track is available for inclines, vertical bends, quick-dip bends and straight runs. The system is maintained at the proper tension by built-in, adjustable take-ups.

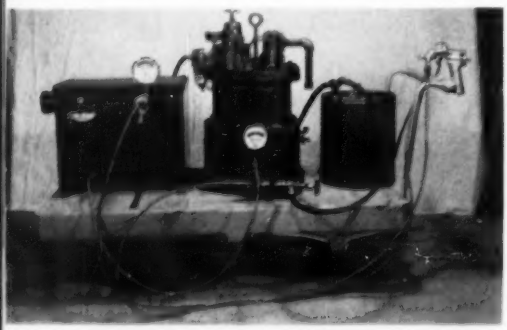
For more data circle **7** on Reader Service Card

★ ★ ★

Airless Spray Painting System

A redesigned Airless Paint Spraying System has been announced by the Bede Products Corporation, Amherst, Ohio. The unit is intended to broaden the applications of this process, making it possible for all types of paint finishes to be sprayed successfully. In operation, this equipment uses a combination of heat and pressure to atomize the paint. This method of atomization is said to reduce back spray and excessive atomization. The latest modification is a sapphire nozzle for equipment used in spraying very abrasive materials, the use of which reduces nozzle wear due to abrasion.

For more data circle **8** on Reader Service Card

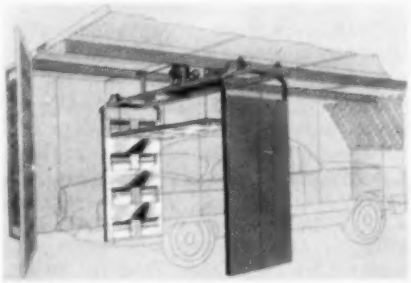


The redesigned Airless Paint Spray setup

★ ★ ★

Flexible Infra-red Paint Drying System

A compact infra-red paint drying system introduced by M & E Manufacturing Co., 2571 Winthrop Ave., Indianapolis, Ind., for auto and truck bodies, utilizes tubular quartz lamps with polished aluminum reflectors which are said to eliminate "dead" spots. Mounted in ceramic heat insulators to protect electrical connections, the 1000 watt lamps have individual low or high heat controls for localized drying.



Cut-a-way view of a compact infra-red oven

The unit consists of 2 vertical lamp banks and a horizontal lamp bank for drying tops, hoods, and decks. All are suspended from an overhead tram which traverses the length of the vehicle to be dried. Booth cleaning is easier, and traverse is unaffected by hose lines or other elements on the floor.

The vertical banks may be adjusted for width, and horizontal banks may be

FINISH IT BETTER...
PLATE IT BETTER...

WITH

DEMINERALIZED WATER
PRODUCED BY
BARNSTEAD EQUIPMENT

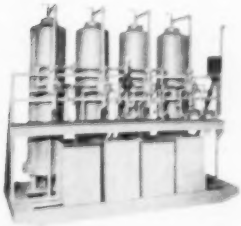
Mixed-Bed Model, 50 gal./hr. Others to 2500 gal./hr.

In rinsing, plating, make-up, anodizing, dye-baths, where Pure Water is needed, free from harmful minerals, manufacturers know that they can save money, reduce rejects, and attain better product control by using Barnstead Demineralized Water

The cost? As little as 5c per 1000 gallons. Operation is simple — easy. Set in place and connect your water service lines. No on-the-job assembly problems.

With a Barnstead Demineralizer you get the benefit of over 75 years of specialized experience in Pure Water — either demineralized or distilled — for Barnstead makes both types of Pure Water equipment. Write for Catalog #123.

2-Bed Model, 200 to 1000 gal./hr.



4-Bed Model, 30 to 1000 gal./hr

Barnstead STILL & STERILIZER CO.
First in Pure Water Since 1878

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New York Office: KIngsbridge 8-1557

For more data circle 169 on Reader Service Card

adjusted for height. By the adjustments of the banks in relationship to the work, maximum heat efficiency is attained, thus reducing the drying time.

The standard car size has 12 k.w. consumption and truck size has 16 k.w. Both operate on 220 volts.

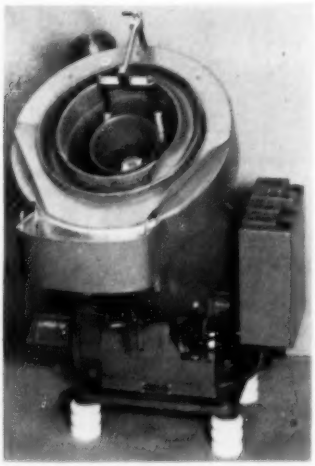
For more data circle 9 on Reader Service Card

★ ★ ★

Barrel Chromium Plating Machine

A barrel-type chromium plating machine for plating of small parts has been announced by the Dawson Corp., 302 5th Ave., N. Pelham, N. Y.

The Riedel Barrel Chrome Plater makes it possible to plate small screws and nuts as well as precision instruments, optical, camera and similar parts by dumping them into the basket and processing them for about ten minutes. A uniform bright or dull chrome plate may be obtained.



Barrel Chromium Plating Machine

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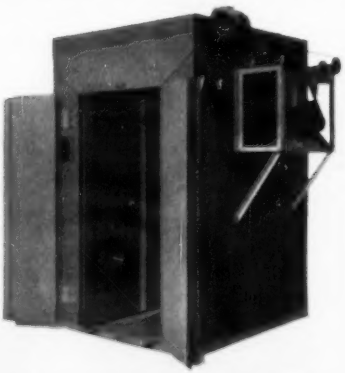
- Electric • Gas • Oil or Steam
- Recirculation Heating
- Low Investment Cost
- Faster Processing
- Safety Control Features

18 truck- or rack-loading sizes and 6 bench and cabinet sizes to meet most of your heating needs. Also special batch and conveyor ovens of all types. Write for Bulletins.



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W. S. ROCKWELL COMPANY

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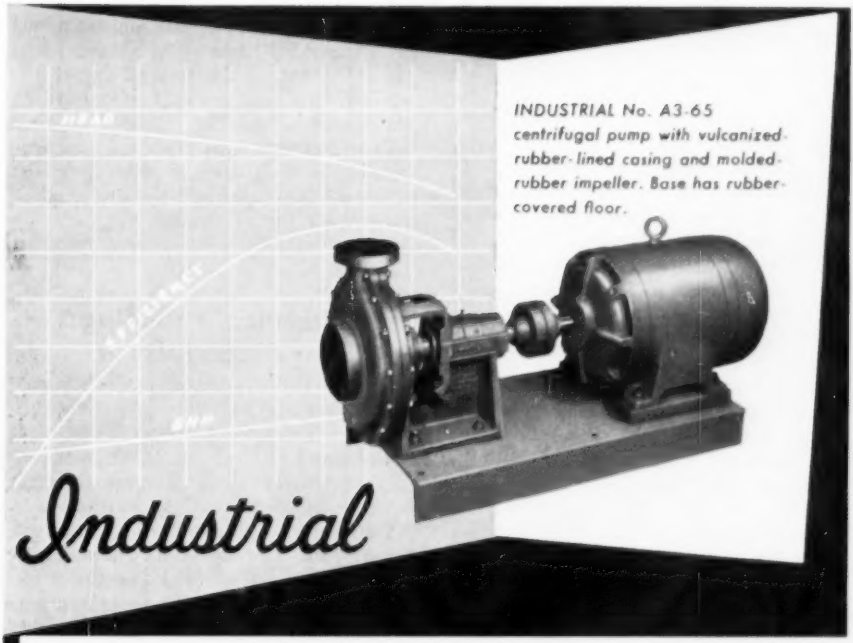

INDUSTRIAL No. A3-65 centrifugal pump with vulcanized-rubber-lined casing and molded-rubber impeller. Base has rubber-covered floor.

RUBBER-LINED PUMPS

for corrosive and noncorrosive liquids

The latest in pump engineering and design is incorporated in INDUSTRIAL centrifugal pumps for maximum efficiency and severe, continuous service. Lined with soft rubber for abrasive slurries or hard rubber as specified, balanced rotating assembly mounted in ball bearings, corrosion-proof stuffing box to permit external liquid seal if required, easily removable packing gland nut and ample space for repacking stuffing box, simple adjustment of impeller clearance are some of the features.

These pumps are made in a range of sizes with capacities up to 240 gpm., operating heads up to 240 feet, and ¾ to 15 hp. They are furnished either with or without base, motor, and coupling.

Complete Information on Request

5162

INDUSTRIAL FILTER & PUMP MFG. CO.

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PRESSURE FILTERS
ION EXCHANGERS
RUBBER LININGS
HEAT EXCHANGERS
CENTRIFUGAL PUMPS

For more data circle **171** on Reader Service Card

These barrel platers are available in three general types:

1. The "Economy," with a capacity of approximately 1 ¼ gallons for short or intermittent plating of very small pieces, such as watch parts.

2. The "Standard," with an approximate capacity of 10 ½ gallons of plating solution. The Standard is versatile as to the size and shape of parts plated, and is designed for long production runs. It is equipped with a vapor exhaust and either a water jacket for cooling or a reserve tank through which the solution is circulated. Both the Economy and Standard models are supplied with two baskets so that one may be loaded while the other is used.

3. The "Automatic" model, designed for mass production plating of small parts, is continuous in operation. Parts are fed into a funnel and brought out after plating by a worm conveyor without interrupting the flow of work.

With a capacity of approximately 13 gallons and a plating cycle averaging 8 to 10 minutes, this machine can produce up to 85 pounds of chrome plated parts an hour, with completely automatic push button operation.

For more data circle **10** on Reader Service Card

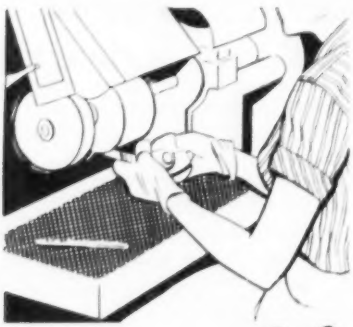
★ ★ ★

Chemical Proofing Materials

The Ceilcote Company, 4848 Ridge Rd., Cleveland 9, Ohio, has announced materials for protecting floors, tank foundations, piers and other concrete surfaced areas of continuous pickling tank installations against corrosives.

Ceilcrete "B," for tank piers and pump pits, Corocrete for floor areas surrounding tanks, and Corobond for bonding acid-proof brick in sumps and

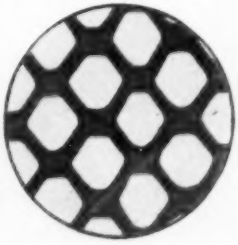
PROTECT FINE PLATED SURFACES



with **RP** *Neotex*

Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP *Neotex*



RESEARCH PRODUCTS CORPORATION

Dept. 76, Madison 10, Wis.

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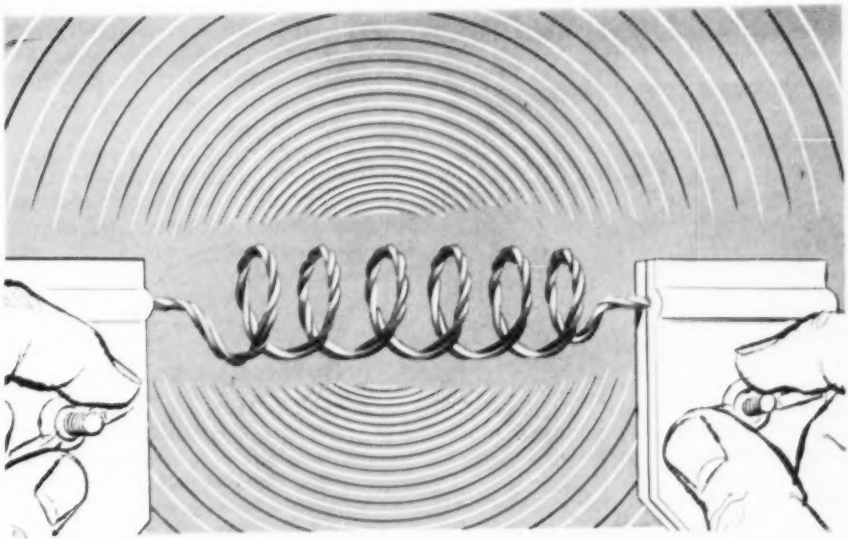

Developed especially for vacuum metalizing to give you top performance at minimum cost!

New Process

SYLVANIA TUNGSTEN COILS and STRAND

New Process Sylvania source heater materials are produced under exacting standards of uniformity throughout every step of manufacture. From tungsten ore to finished coils and strand, every production operation is done in Sylvania's own plants.

Special tungsten wire is coiled specifically for vacuum metalizing to assure maximum evaporating capacity and long service life. Sylvania offers you a wide selection of ready-made tungsten coils, in single or multiple strand, each designed for a specific metalizing application.

If you prefer to form your own source heater coils, there is a full range of wire diameters and types to choose from. Write for your copy of the newly published "*New Process Sylvania Tungsten Coils and Strand*," presenting application and performance data.

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Lighting • Radio • Electronics • Television • Atomic Energy

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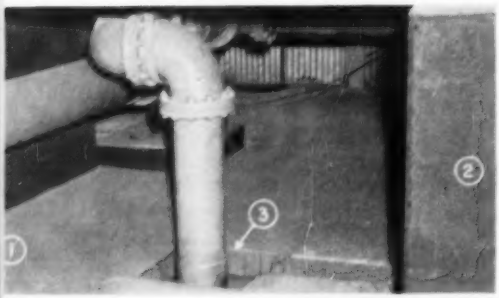

(1) Corocrete used on floor. (2) Ceilcrete "B" used for protecting piers. (3) Corobond cement bonded brick is used for lining well.

hot wells are recommended materials.

Ceilcrete "B" is a thermosetting plastic base surfacing which when reinforced with glass cloth, is used to protect tank piers and pump pits.

Corocrete is formulated to protect the floor area surrounding the tank. Developed for application directly over concrete, this material is composed of three basic ingredients: (1) a thermosetting resin liquid, (2) a hardening agent, and (3) an aggregate-type filler.

Corobond is a synthetic resinous bonding cement for brick and tile. It features workability, chemical and thermal resistance.

For more data circle 11 on Reader Service Card

★ ★ ★

Automatic Loader

Wagner Brothers, Inc., 432 Midland Ave., Detroit 3, Mich., has announced the "Auto-Loader," a completely automatic parts transfer mechanism which can be adapted to any automatic metal finishing mechanism operating with an intermittent motion. Originally designed for automatic electroplating machinery, the Auto-Loader also finds ap-

NEWCOMB-DETROIT

PIONEERS IN ENGINEERING, MANUFACTURE AND INSTALLATION OF

INDUSTRIAL OVENS
SPRAY BOOTHS
PARTS WASHERS
DUST COLLECTORS
AIR SYSTEMS

ESTABLISHED 1912
DETROIT DIVISION – GRAND RAPIDS DIVISION –
NEWCOMB INDUSTRIES LTD., WINDSOR DIVISION

For Bulletins and Quotations, Wire, Write or Call—
NEWCOMB-DETROIT
5761 Russell St.,
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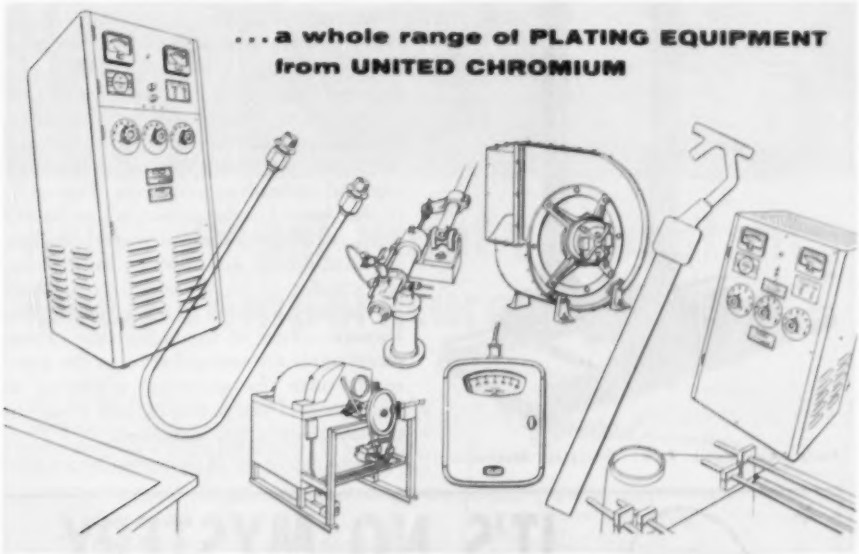
TR 3-2100

For more data circle 174 on Reader Service Card

Designed to give you economy and efficiency in plating



Whether you need one new piece of equipment or a complete installation... here's good news for you. The Unichrome name can now be found on *equipment*, too.

That means plenty to platers who have known the kind of time- and money-savings which United Chromium's help makes possible. It means equipment that's right for the job... for longer service... and for substantial savings that go on year after year.

Ask us for a proposal. We'll be glad to survey your requirements in tanks, rectifiers, anodes, agitators, heating coils, temperature controllers, blowers, and all the other necessities for your operation.

UNICHROME

equipment • materials • processes

for better plating at a better profit

UNITED CHROMIUM DIVISION

Metal & Thermit corporation

100 East 42nd Street, New York 17, N. Y.
Detroit 20, Mich. • Waterbury 20, Conn.
East Chicago, Ind. • El Segundo, Calif.
In Canada: United Chromium Limited, Toronto 1, Ont.

For more data circle **175** on Reader Service Card

Fully Automatic Parts Transfer Mechanism

plication in any automatic parts finishing operation such as anodizing, phosphate coating, etching, electropolishing, oxide coating, painting, cleaning, and so on.

All the transfer mechanism of the Auto-Loader is mounted on a reciprocating carriage, moving on rollers in a channel track. Cam followers attached to the lifting arms duplicate the eccentric contour of the side plates to raise and lower the lifting arms into the loading and unloading positions. The cycle of the Auto-Loader is controlled by the limit switches of the automatic processing machinery, actuated by an hydraulic cylinder, or an electric drive, to move in perfectly-timed unison with the transfer cycle of the automatic. Processed parts are unloaded from the automatic onto the monorail conveyor as unprocessed parts are loaded from the monorail onto the automatic.

For more data circle 12 on Reader Service Card

IT'S NO MYSTERY

...WHY MORE AND MORE COMPANIES ARE USING ELECTRO-GLO ELECTROPOLISHING FOR BETTER METAL FINISHING

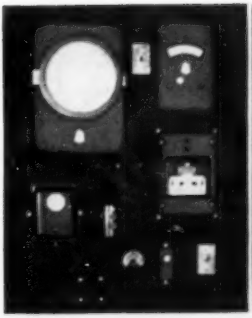
Electro-Glo electro-polishing concentrates mean savings to you in Time, Labor and Production Costs. Brightens, smooths and deburrs in one simple operation.

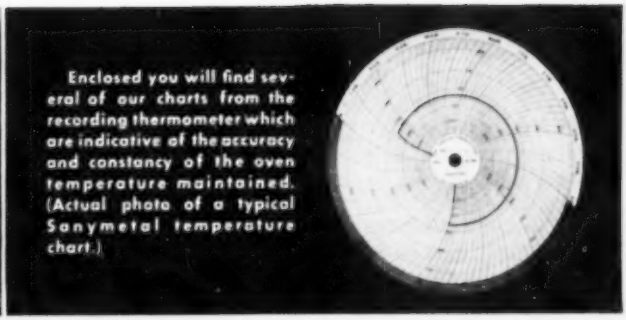
Copper Alloys..... ELECTRO-GLO #200
Austenitic Stainless Steel ELECTRO-GLO #300
Martensitic Stainless Steel ELECTRO-GLO #400
Carbon Steel..... FERRO-GLO #500

WRITE FOR DETAILS AND NEAREST DISTRIBUTOR

Electro-Glo COMPANY
1430 S. TALMAN AVE.
CHICAGO 8, ILLINOIS

For more data circle 176 on Reader Service Card




Enclosed you will find several of our charts from the recording thermometer which are indicative of the accuracy and constancy of the oven temperature maintained. (Actual photo of a typical Sanymetal temperature chart.)

Here's **Visual Proof** of **Constant Oven Temperature Control...**

Mr. K. W. Benham, Vice President of The Sanymetal Products Co., Inc., writes, "We are sure you will be interested in knowing the results we have experienced in the use of the oven we purchased from you in 1953.

"We are using this oven for baking finishes on metal toilet compartments, using twenty-two standard colors in the pastel shades. Many of these colors range from a white to light creams and ivories and due to constant even temperatures we have experienced highly satisfactory results in getting uniform color and complete baking.

"We are very well satisfied with the equipment and the service given us by your company."

A typical battery of Sanymetal Toilet Compartments

LANLY FINISHING OVENS
THE LANLY COMPANY • 780 PROSPECT AVE
CLEVELAND, OHIO

You too can do a better job with LANLY finishing ovens

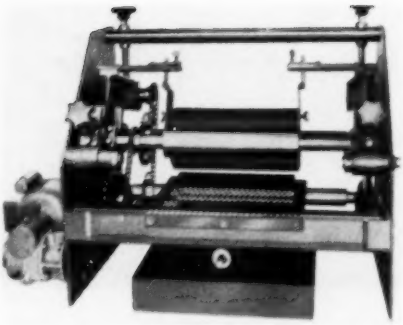
WRITE FOR THE CATALOG

For more data circle 177 on Reader Service Card

Lab Roller Coating Machine

Manufacture of a laboratory roller coating machine for testing protective coatings has been announced by Gasway Corp., 6459 N. Ravenswood Ave., Chicago 26, Ill. The machine is quite similar to the Gasway line of regular production model rollercoaters, except that it is smaller and not equipped for high production operation.

This machine is constructed on a steel framework and measures 30¼ inches wide, 18 inches deep, and 27 inches high. The 6 by 12⅞ inch coating roll is made of steel with a rubber covering, and incorporates a 3 inch steel paint metering roll and a 4½ inch chrome-plated backup roll. The paint is transferred to the work by means of the rubber covered coating roll. A ¼ h.p. motor and speed reducer gives a machine operating speed of 30 feet per minute.



Gasway Laboratory Roller Coating Machine

The laboratory coater is adjustable to materials up to 1½ inches thick. This machine is also furnished with adjustable end dams which maintain the proper paint supply between the metering roll and the coating roll. Coating of the under side of the work is avoided by means of a doctor blade which continuously scrapes the chrome-plated backup roll clean. Paint film thickness is regulated by means of adjustable hand wheels at either side of the coater. In order to facilitate the change from one thickness of work to another, the design of this coater permits adjustment of the coating roll without the necessity of changing the adjustment of the metering roll.

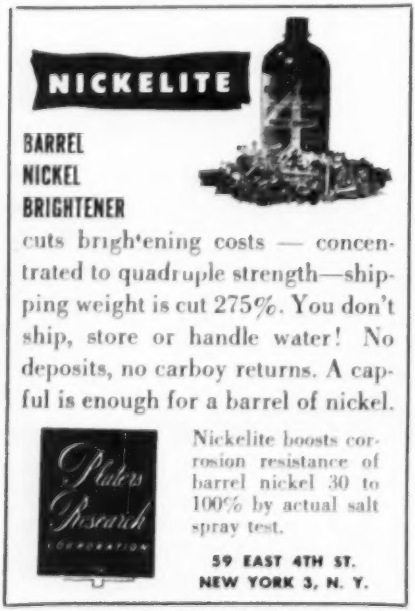
For more data circle **13** on Reader Service Card

★ ★ ★

Spray Washer Compounds

The Detrex Corporation, Box 501, Detroit 32, Mich., manufacturer of chemicals and chemical equipment, has announced the development of two compounds for mechanical washing of ferrous and non-ferrous metals — Detrex 58 and Detrex 59.

Detrex 58, for ferrous metals, has sequestering agents built into the product


NICKELITE
BARREL
NICKEL
BRIGHTENER
cuts brightening costs — concentrated to quadruple strength—shipping weight is cut 275%. You don't ship, store or handle water! No deposits, no carboy returns. A capful is enough for a barrel of nickel.
Nickelite boosts corrosion resistance of barrel nickel 30 to 100% by actual salt spray test.
Platers Research Corporation
59 EAST 4TH ST.
NEW YORK 3, N. Y.

For more data circle **178** on Reader Service Card

MANUFACTURERS OF PROTECTIVE AND DECORATIVE FINISHES

● Boy! Is that weather *right* today! Just breeze through this pitch on R/V products — all kinds of varnishes, enamels, and lacquers, carefully compounded of selected materials, shipped promptly in desired quantities, priced right, backed by an established reputation. We'd like to hear from you . . .

Affiliate: GORDON BARTELS CO., *Roller Coating Specialists*

For more data circle 179 on Reader Service Card

to overcome hard water conditions and assist in removing hard water scale without foaming problems commonly encountered.

Detrex 59 is designed for cleaning non-ferrous metals such as brass and aluminum. Detrex 59 is a highly buffered product designed to eliminate etching and reduce tarnish.

Literature is available on these items by request. Visit the Detrex Booth 1205 at the Metal Show in Philadelphia for detailed information.

For more data circle 14 on Reader Service Card

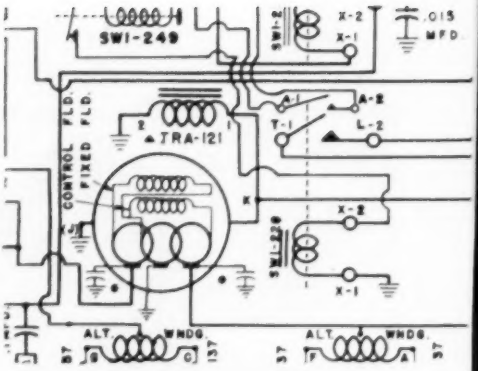
★ ★ ★

Screen Process Ink

The Naz-Dar Co., 461 Milwaukee Ave., Chicago 10, Ill., has announced P. C. Black, a free flowing screen process ink designed specifically for printed electronic circuitry. According to the manufacturer, its opacity allows it to lay an unbroken resist line of hairline accuracy without blobbing or breaking the circuit. Commonly used etching chemicals have no effect on this ink once it is applied to the printing blank.

P. C. Black recommends itself to volume production of printed circuits in the way it reacts instantly to petroleum solvents. This ink is available in two types: one which may be air-dried for normal production, and the other which can be heat-dried for accelerated volume. Although black has proven to have the highest visibility factor in this product, the Printed Circuit line is available in any standard color.

For more data circle 15 on Reader Service Card



Typical circuit printed with the Naz-Dar P. C. Black screen process ink for printed circuits.

Telephone collect for free brochure on

STRIPPING COPPER

with

McKeon's "Liquid Sulphur"

Economical, fast, non-electrolytic.

Sulphur Products Co., Inc.

228 McKEON WAY GREENSBURG 6, PA.

For more data circle 180 on Reader Service Card

MORSE

VERTICAL DRUM TRUCK

ROCK-A-DRUM

Picks up 55 gal. drums, rolls them over for side draining. Becomes a rugged stand on 3" wheels.

MORSE MFG. CO., INC. 762 W. Monlius St. East Syracuse, N.Y.

For more data circle 181 on Reader Service Card

SOLVENTS and THINNERS RECOVERED

from wash thinners, spoiled lacquers, degreasing machine sludge, etc.

Solvents recovered by the Lofgren Process.

Each customer's shipment, whether one drum or a carload, receives proper and separate treatment. Write to:

Solvents Recovery Service, Inc.

1025 Broad St. Newark 2, New Jersey

Hammond Solvents Recovery Service

241 Brunswick Rd. Hammond, Ind.

For more data circle 182 on Reader Service Card

PACKER MACHINE INTRODUCES

NEW COMPOUND APPLICATOR

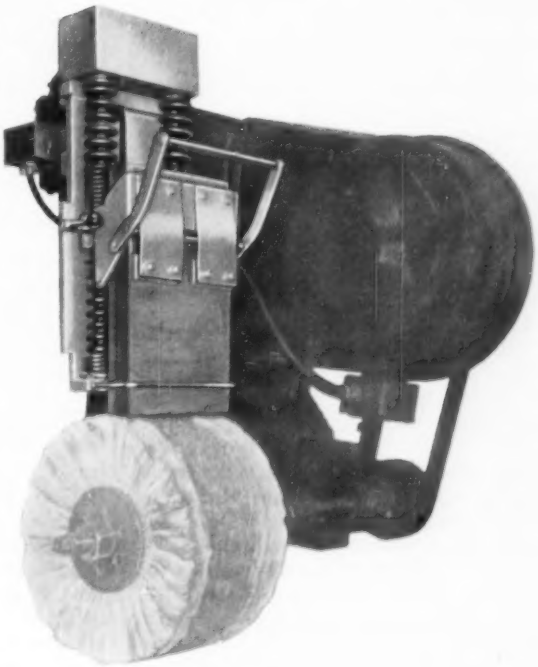
That Will Improve Your Present Equipment

Now PACKER MACHINE CO., offers users of Automatic, Semi-Automatic and Hand Jack Equipment, an all new, completely enclosed, automatic compound applicator that will increase your operators' buffing output per hour and cut bar compound waste to a minimum.

As pioneer builders of *Automatic* Polishing and Buffing Machinery, Packer combined years of experience and engineering "know-how" to perfect this new automatic applicator.

It is designed to hold any length bar compound and rouge 2" thick, and will feed 10" of compound to a buffing wheel in one setting

Power is provided by a 1/20 H.P. motorized reducer drive —115 volts, single phase; 220 volt unit optional.



ADAPTABLE TO AUTOMATIC, SEMI-AUTOMATIC AND HAND JACK EQUIPMENT

For further details on the Model No. 60 Applicator, phone, wire, or write Mr. E. C. Ness.

PACKER-MATIC

AUTOMATIC MACHINES FOR BUFFING • POLISHING • DEBURRING

THE PACKER MACHINE CO.

MERIDEN, CONNECTICUT

For more data circle 183 on Reader Service Card

Buffing Compound Remover

A liquid specially formulated for loosening buffing compounds prior to cleaning has been announced by Thor Chemical & Equipment Corp., 77 S. 5th St., Brooklyn 11, N. Y. It may be used on any metal to ensure thorough removal of buffing compound. It will not tarnish brass or copper, and will darken zinc die castings only after long immersion, the manufacturer states. A liquid material, it is used 6 oz./gal. of hot (180-210 deg. F.) water.

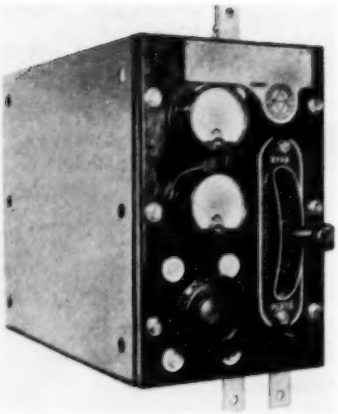
For more data circle **16** on Reader Service Card

★ ★ ★

Carbon Pile Tank Rheostat

Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J., has announced a carbon pile tank rheostat for precise current control during electroplating operations. This Universal Tank Rheostat consists of a rectangular carbon-plate rheostat, an adjustable nickel-chromium resistor, a reversing switch, a voltmeter, and an ammeter.

The Universal Rheostat controls the plating current and permits the selection of the proper tank rheostat without specifying "voltage drop," states the manufacturer. The unit provides all tank voltages for a specified line voltage up to 12 volts, and amperage ranging from 30 to 250. It is available in four sizes.



H-VW-M Universal Tank Rheostat

For more data circle **17** on Reader Service Card

★ ★ ★

Fiberglas Reinforced Pipe

A line of fiberglas reinforced plastic pipe has been announced by Reinforced Laminates, Inc., 3050 E. Hennepin Ave., Minneapolis 13, Minn. This pipe is intended for use under corrosive conditions. According to the manufacturer, the thermosetting resins which are used give good resistance to most acid and alkaline solutions. In addition, this pipe can be built for moderately high pressures and temperatures.

GLO-QUARTZ*
IMMERSION HEATERS
for
ALL ACIDS, ALKALIES, WATER, ETC.
GLO-QUARTZ ELEC. HEATER CO., INC.
WILLOUGHBY, OHIO
*Trademark Reg. U. S. Pat. Off.

For more data circle **184** on Reader Service Card

Cut upkeep costs with "FLOTE"

. . . recent water-wash spray booth discovery
Only 75 cents a day saves up to $3500 a year!

"FLOTE"* eliminates sinking paint sludge—even with heavy primers; stops clogging, backwall build-up!

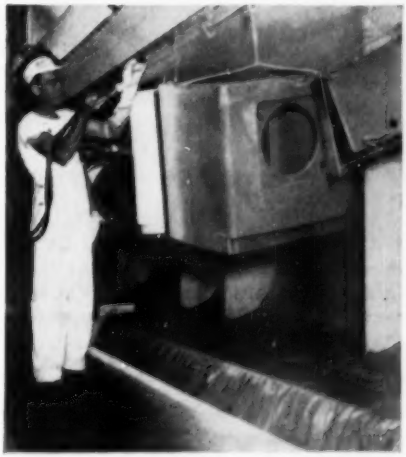
Regardless of the type of water-wash spray booth you use – and no matter what organic finish you use – Wyandotte "FLOTE" will improve operating efficiency, cut maintenance costs. Just add "FLOTE" to your water system.

For "FLOTE" *floats* all types of paint overspray – even heavy primers – and *keeps them afloat* for easy skimming. Eliminates most foaming problems, too!

Enthusiastic users of "FLOTE" include: one of the world's largest camera manufacturers; a leading farm-machinery company; a large truck-trailer producer; air-conditioning firms; a leading furnace manufacturer; an aircraft factory – even a mammoth auto maker . . . plus appliance and furniture manufacturers, and many, many more!

If you'd like to *float* away *your* spray booth problems, and cut maintenance costs, mail coupon for full data on Wyandotte "FLOTE." Do it today!

Wyandotte Chemicals Corp., Wyandotte, Mich. Also Los Nietos, Calif. Offices in principal cities.



In a water-wash spray booth, like the one above, as little as 75 cents worth of "FLOTE" a day can save you up to $3500 a year! "FLOTE" is a *complete* product – nothing else to add!

Wyandotte CHEMICALS
J. B. FORD DIVISION

*PATENT APPLIED FOR

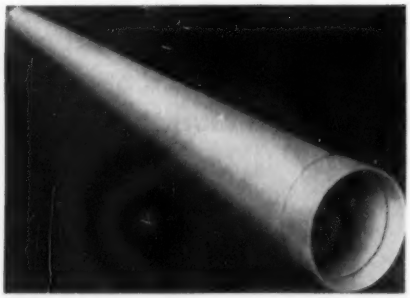
Available in 150-lb. and 425-lb. steel drums.

WYANDOTTE CHEMICALS CORPORATION
Wyandotte, Michigan

Send me further data on "FLOTE" ☐
Have a representative call ☐

Name _____
Firm _____
Address _____
City _____ Zone ____ State _____

For more data circle 185 on Reader Service Card



Section of Fiberglas Reinforced Plastic Pipe

The method of fabricating is such that the fiberglas reinforcement can be oriented to provide needed strength for different requirements. A selection of resins (principally modified epoxies) is available for special needs.

For more data circle **18** on Reader Service Card

Protect spray booths with

BOOTHCOTE

the finest product made!

SAFER

Non-Inflammable, Non-Toxic

DRY-OR-WET

Boothcote No. 4 for dry wall booths (just peel off overspray)

Boothcote No. 5 for water wash walls

SAVES

TIME, LABOR, MONEY!

(Apply — Spray or Brush)

In 55 gal. drums . . . 80¢ gal.

In 15 gal. drums . . . $1.00 gal.

In 5 gal. pails . . . $1.25 gal.

F.O.B. Buffalo, N. Y.

Inquiries Invited — Samples on Request

HYGRADE

Food Products Corp., Industrial Division

18 Stetson St., Buffalo 6, N. Y.

For more data circle **186** on Reader Service Card

Barrel Units For Electroplating Small Lots

Two barrel units designed for electroplating small parts and/or small quantities of larger parts have been announced by Technic, Inc., Providence, Rhode Island.

Model OH-42 is a dual barrel electroplating unit, and Model HP-4 is a portable plating barrel. Both are made of high temperature transparent plastic, so that they can be used in any solution for electroplating precious metals, and it is stated that they will adapt readily to any type of electroplating.

Dual Barrel Model OH-42 is a complete barrel plating unit in itself, of one gallon capacity, with 60 cycle, single phase, 110 volt motor attached. Rod for tank plating is included.

The Model HP-4 Portable Barrel is intended for use by immersion in any existing tank.

Model OH-42 and Model HP-4 are new developments of Technic research, testing and design. The makers anticipate they will fill the long felt need for a reliable method of electroplating very small parts, and for the electroplating of small quantities of larger parts which is often necessary in completing large quantity runs.

For more data circle **19** on Reader Service Card

★ ★ ★

Chemical Resistant Paint

Corosobar, a chemical resistant rubber base interior paint, has been developed by The Tremco Manufacturing Company, Cleveland, Ohio.

One of the styrene-butadiene family, Corosobar is notable for ease of application and excellent color retention, the manufacturer states.

The product is formulated to resist severe moisture conditions, chemical fumes and even occasional direct con-

Who Uses Airless Spray Painting Systems?

CUT PAINT LOSSES

INCREASE PER GALLON COVERAGE

SAVE ON SOLVENTS

REDUCE HEALTH HAZARDS

MAINTAIN UNIFORM VISCOSITY

DESIGNED TO FIT YOUR NEEDS

OLIVER CORPORATION, Cleveland, Ohio

WHY?

Most manufacturers of heavy equipment have finishing problems . . . and many of these manufacturers have solved their problem with Bede Airless Spray Painting Systems.

Notice the absence of special hoods, curtains, etc. They spray it on the spot.

There are considerable savings waiting for you if you'll ask us in to demonstrate this revolutionary new painting system.

See airless spray painting on demonstration at the National Metal Exposition Booth 1361, October 17-21, Philadelphia

WRITE FOR CATALOG ON REVOLUTIONARY NEW AIRLESS SPRAY PAINTING PROCESS . . . *IT'S NEW*

BEDE PRODUCTS CORPORATION

HOT SPRAY AND AIRLESS INDUSTRIAL FINISHING EQUIPMENT

JACKSON ST. AMHERST 44-711 AMHERST, OHIO

DEPT. I

For more data circle **187** on Reader Service Card

tact with acid and alkali solutions.

Corosobar is designed for use on walls, ceilings and equipment in establishments where severe moisture and chemical conditions prevail. Further information can be obtained by writing The Tremco Manufacturing Co., 8701 Kinsman Rd., Cleveland 4, Ohio.

For more data circle 20 on Reader Service Card

★ ★ ★

Lightweight Spray Gun

Binks Mfg. Co., 3118-40 Carroll Ave., Chicago 12, Ill., has announced a lightweight spray gun with an overhead trigger for all types of touch-up work and shading.

Binks Model 15 Spray Gun

This Model 15 spray gun has the air line connection at the back of the gun, putting the weight of the hose on the arm and thus making it easier to reach into corners or awkward spots, states the manufacturer.

Another addition to this spray gun is the 4 oz. glass siphon cup which can be used to store various finishes or colors; 8 and 16 oz. aluminum siphon cups are also available.

For more data circle 21 on Reader Service Card

★ ★ ★

High Capacity Dust Collector

A Dustkop dust collector, to be used where greater dust storage capacity is necessary, has been announced by Aget Manufacturing Company, 1390 E. Church St., Adrian, Mich. Known as the 30NW50, it has an air handling capacity of 3600 cubic feet of air per minute, with a static pressure of 6 inches of water. The Dustkop model is capable of collecting dust from practically any dust creating machine or operation, especially where the dust volume runs to rather high bulk.

The collector eliminates the emptying of a regular dust bin by shovel, with the addition of two rubber caster, roller dust cans that are connected to the collector by an all metal diversion

METABOND

MEANS *PROGRESS* IN RUSTPROOFING

METABOND is the only effective immersion or spray amorphous type zinc coating in the industry today.

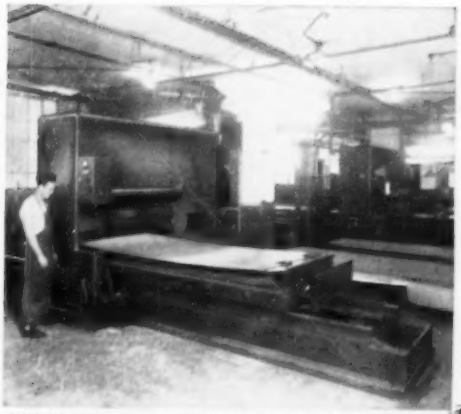
METABOND withstands severe and consistent flexing and bending without chipping or breaking bond.

INTERNATIONAL RUSTPROOF CORPORATION

12507 PLOVER AVENUE • • • • CLEVELAND 7, OHIO

MANUFACTURERS OF RUST PREVENTIVES AND CORROSIVE SOLVENTS

For more data circle 188 on Reader Service Card



HILL Sheet Grinder and Polisher with reciprocating hydraulic table processing individual sheets.

HILL

GRINDING and POLISHING MACHINES

How much is it costing you to produce ACCEPTABLE finishes on FLAT surfaces

HILL Pinch Roll Grinder and Polisher for "Wet" or "Dry" operations. (Shown in series for straight line production)

HILL 2-Roll Vertical Abrasive Belt Grinding and Polishing machines are the logical result of 25 years of research and experience in producing self contained units for successfully processing ferrous and non-ferrous sheets. We have consistently proven that wide abrasive belt grinding and polishing equipment must incorporate these fundamental features — rugged construction, simplicity of design, accessibility, versatility and centralized controls.

HILL abrasive belt polishing machines are recommended for continuous operation and insure lower production costs with superior finishes as required today by the manufacturers of decorative plastics, food processing equipment, automobile bumpers, lithographers and photo engravers plates, home appliances, etc., etc.

Both types of machines are normally built up to 60" wide, and larger capacity equipment can also be furnished.

Your inquiries are solicited for detailed information and recommendations.

HILL ACME TOOLS OF INDUSTRY

THE HILL ACME COMPANY

1209 WEST 65th STREET • • • CLEVELAND 2, OHIO

"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING • THREADING TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • PORTABLE FLOOR CRANES • "CLEVELAND" KNIVES • SHEAR BLADES

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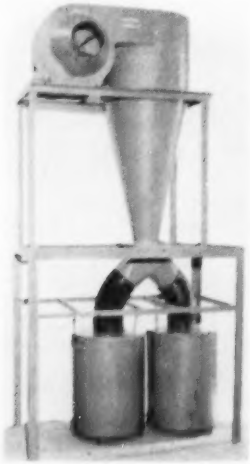


High Capacity Dust Collector

Y, for simplified emptying and maintenance. The 30NW50 is available as a recirculating air unit, or with attachments for outside exhaust where state codes, or the nature of the type of dust prohibits recirculation of the air within the plant. Clamp-on lids and Y connection are self-suspending for roller can removal and dumping operation.

For more data circle **22** on Reader Service Card

Cold Cleaner

Metal parts can be cold cleaned before inspection, storing or further processing through the use of a cleanser produced by the International Chemical Company, Inc., Dept. 256, 2828 N. Mascher St., Philadelphia, Pa.

Called International Compound No. 504, this cold cleaner is primarily intended for use diluted with water in pressure spray power washing machines. No heat is necessary.

A concentrated liquid mixture of detergents, wetting agents, high solvency power naphthas and solvents, rust inhibitors and emulsifiers, compound No. 504 also provides a temporary rust preventive film over cleaned parts.

For more data circle **23** on Reader Service Card

★ ★ ★

Paint Stripper

Northwest Chemical Co., 9310 Roselawn Ave., Detroit 4, Michigan has announced the development of Liquid Stripper No. 11, for chemically stripping paint and other organic finishes from plastics.

Liquid Stripper No. 11 is said to make possible complete removal of organic finishes in one run-through, yet not react with most plastics.

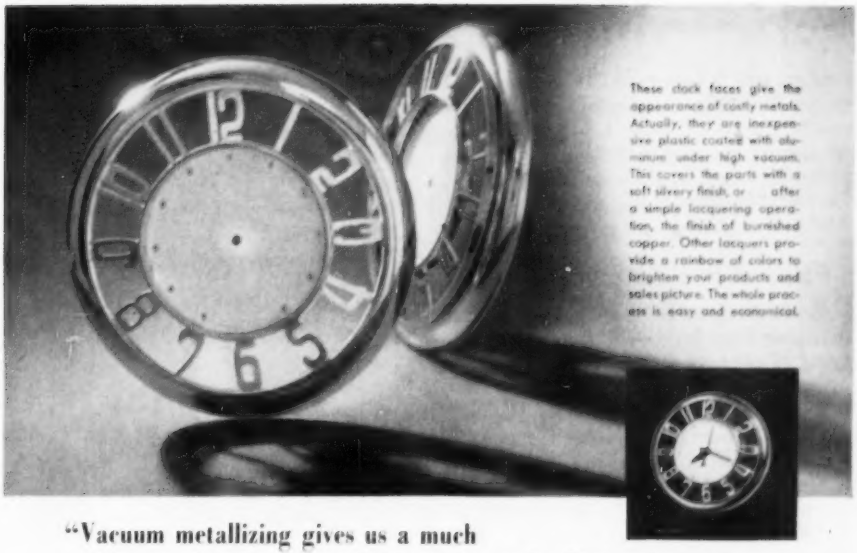
Liquid Stripper No. 11 is safe, involves no fire hazard, no odor, no

MASKING TAPE
DIE-CUT TO YOUR EXACT SPECIFICATIONS FROM
SCOTCH BRAND
INDIVIDUAL PIECES • ANY SIZE OR SHAPE
For quick, accurate masking operations
PHONE OR WRITE **PANOCO**
166 HENRY STREET, STAMFORD, CONN.

For more data circle **190** on Reader Service Card

PROFIT??
You will profit from these! (1) ELECTROPLATING KNOW HOW, the outstanding home study course! (2) WATER AND WASTE CONTROL FOR THE PLATING SHOP, a plating shop must! (3) TANK DOCTORS, the unique, time saving, all-plastic, trouble shooting charts! (4) The SUR-TEN METER—controls surface tension easily! (5) The STRESOMETER for quick, accurate stress measurements! Write! Joseph B. Kushner Electroplating School, Stroudsburg 20F, Pa.

For more data circle **191** on Reader Service Card



These clock faces give the appearance of costly metals. Actually, they are inexpensive plastic coated with aluminum under high vacuum. This covers the parts with a soft silvery finish, or ... after a simple lacquering operation, the finish of burnished copper. Other lacquers provide a rainbow of colors to brighten your products and sales picture. The whole process is easy and economical.

"Vacuum metallizing gives us a much wider market for our molded plastics and additional profit for the operations performed after molding."

W. C. Conray, Sales Manager
Plastics Division Erie Resistor Corporation

Erie Resistor Corporation, Erie, Pa., uses a battery of *CVC* vacuum coaters to give inexpensive plastic parts the rich finish of costly metals.

Coating parts with aluminum under high vacuum and applying various lacquers can give them the attractive appearance of gold, silver, copper, or a whole rainbow of other metallic colors.

The two clock faces shown above, for example, have the soft sheen of burnished copper and silver. Stringent tests (see below) show that the metallized finish is durable. Rough usage leaves its color and shine unmarred.

Vacuum metallizing is simple and inexpensive. A few hours training makes any of your help expert in the metallizing operation. Just a few ounces of aluminum covers thousands of parts. The process works as well with basic metals as with plastics.

You are welcome to share our experience in high-vacuum metallizing and associated lacquering operations.

We will be glad to discuss any particular applications with you.

Tests used by Erie Resistor on the metallized finish of the clock faces:

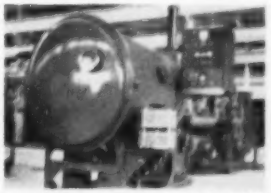
Scratch test. Cut cross-hatched lines approximately $\frac{1}{16}$" apart with sharp tool. Stick clear adhesive tape over the surface. When tape is removed, finish should remain on part.

Temperature shock. Place parts in 140° F. oven for two hours. Remove and place immediately in −20° F. cold chamber (air).

Humidity test. Expose parts to 120° F. for two hours and then to 92% R.H. at room temperature (86° F.). Four cycles of this exposure.

Fading test. Expose samples to ultraviolet light for 100 hours using a Corning 5" 1ØCVX RDL-type filter with a G.E. 1000-watt, RH-4 mercury vapor lamp located 7" from the samples. No fading or discoloration should occur.

The above tests should not cause any observable change in the finished parts.



This 48" vacuum coater is one of three CVC production coaters used by Erie Resistor. Smaller sized models also supplied by CVC provide economical operation for short production runs. We deliver these units with all necessary equipment and controls—ready to install.

CVC

Headquarters for High Vacuum

Consolidated Vacuum Corporation Rochester 3, N. Y.

a subsidiary of CONSOLIDATED ENGINEERING CORPORATION, *Pasadena, California*

CVC sales now handled through Consolidated Engineering Corporation with offices located in: Albuquerque • Atlanta Boston • Buffalo • Chicago • Dallas • Detroit • New York • Palo Alto • Pasadena • Philadelphia • Seattle • Washington, D. C.

For more data circle **192** on Reader Service Card

fumes, and is non-toxic. It converts the paint film into a soluble form that is easily rinsed off, and the stripper contains only chemicals that can be flushed through usual waste disposal lines.

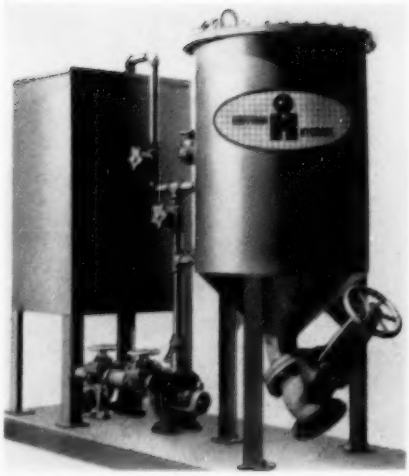
For more data circle **24** on Reader Service Card

★ ★ ★

Phosphate Solution Filter

A Hoffman-Hygrade self-cleaning pressure filter for de-sludging and clarifying phosphate solutions so that proper phosphate coating of metal parts takes place has been announced by the U. S. Hoffman Machinery Corp., 105 Fourth Avenue, New York 3, N. Y.

Use of the filter is intended to reduce de-sludging and tank cleaning to a once-a-year task and decrease maintenance by eliminating the need for cleaning and replacement of nozzles, pumps, headers and risers.



Phosphate Solution Filter

The Hoffman-Hygrade filter consists of a pre-coat tank, filter pump, pressure chamber, splash-proof electric motor, pressure gage and relief valve. It includes a backwashing device which accomplishes filter cleaning by turning two valves.

Operating at pressures from 10-125 p.s.i., the unit can be permanently installed or mounted on a portable platform for filtration in remote areas.

According to the company, the filter will provide a constant flow of clean solution to the phosphatizing bath.

For more data circle **25** on Reader Service Card

★ ★ ★

Automatic Cleaning Unit

The Cincinnati Cleaning & Finishing Machinery Company, 2008 Hageman St., Sharonville, Ohio, has announced an automatic unit to clean large metal gondolas, used to transport castings and rough metal parts.

Previously, the gondolas, which tend to collect oil, grease, chips, dirt and

Engineered for Extra Years of Trouble-Free Operation

WALKER
Selenium Rectifiers

You can't beat Walker Selenium Rectifiers for dependable D.C. regardless of the size of your plating installation.

These outstanding rectifiers are especially designed to give year in, year out service . . . minimum maintenance . . . no moving parts . . . nothing to wear out . . . nothing to get out of adjustment.

You get more for your money when you use Walker Selenium Rectifiers. Get the complete story, today. Write

Walker
THE WALKER DIVISION
NORMA-HOFFMANN BEARINGS CORPORATION
STAMFORD, CONNECTICUT

For more data circle **193** on Reader Service Card

This new Magnus bulletin is the last word on metal cleaning . . . techniques, equipment and cleaning materials. It will help you cut costs, speed cleaning and improve quality.

WRITE FOR A COPY. USE THE COUPON.

MAGNUS CHEMICAL COMPANY, INC.
208 South Ave., Garwood, N. J.

Send a copy of Bulletin 10000-G.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

magnus

For more data circle **194** on Reader Service Card

miscellaneous debris, were cleaned by hand and hose spray. To clean a gondola with the automatic machine, the fork-lift truck operator transports a gondola to the machine, places it on the receiving fixture, then presses the "start" button. The balance of the operation is automatic.

The dirty gondola is automatically turned up-side-down, permitting loose debris to empty into a refuse container. It is then carried into the machine and brought to a stop in the cleaning section. During an automatically timed cycle, high pressure spray nozzles wash the interior and exterior of the gondola and debris is flushed away.

The gondola is then automatically conveyed from the cleaning section and returned to its upright position on the loading fixture. It may be removed by the fork-lift truck operator at any time.

For more data circle 26 on Reader Service Card

★ ★ ★

Immersion Heater

Summit Products, Inc., 15 Vose Ave., South Orange, N. J., has announced an immersion heater designed for electroplating and pickling baths. Several sizes for industrial as well as laboratory use are available.

Immersion Heater

Summit Products heaters are constructed of coiled resistance wire elements centered in the lower portion of fused quartz tubes. The quartz tubes are inert to corrosives (except hydrofluoric acid and caustics), possess high electrical insulation, a high rate of heat transfer at the operating temperature of the heating element, and good thermal shock resistance.

The units are immersed directly in the liquid being heated, thus preventing heat loss, and resulting in cooler and cleaner working conditions.

Automatic controls are available, allowing more efficient and uniform regulation of bath temperature. Heaters for special applications may be engineered to specific requirements.

For more data circle 27 on Reader Service Card

★ ★ ★

Stationary Fixture Finishing Machine

An eight-door stationary fixture finishing machine designed for producing a bright, lustrous finish on aluminum

Park No. 290
BLACKENING SALT

Black Oxide finishing for rust resistance and decorative parts. Speedy black coating in water solution with no electric current. Permanent black finish on ordnance parts, tools, aircraft, bearing races. Dazzling black decorative finish for television cameras, business machines, hardware, metal screens and machine parts. Excellent bond for paints and enamels. Simple one bath operation. Write for bulletin H-16. Park Chemical Co., 8078 Military Ave., Detroit 4, Mich.

For more data circle 195 on Reader Service Card

SLASH COATING COSTS— INCREASE PRODUCTION WITH THE NEW

MURRAY WAY ROLLER COATER

- Coats one or both sides of work.
- Ruggedly built for high production.
- Unusually compact design.
- New type construction permits fast, easy access to rolls.
- Rolls may be removed without disturbing drive.
- Upper and lower rolls have separate drives.
- Bearings and drive mechanism are effectively shielded from coating fluid.
- Easily accessible Vernier roll adjustments.

You can buff, polish, grind, coat or filter BETTER with Murray-Way

MURRAY-WAY CORPORATION

P. O. BOX 180, MAPLE ROAD EAST · BIRMINGHAM, MICH.

Polishing, Buffing, Grinding, Filtering Equipment that automatically cuts your costs.

For more data circle 196 on Reader Service Card

castings, has been announced by Roto-Finish Co., 3704 Milham Rd., Kalamazoo, Michigan.

This machine has a door on each flat of a single compartment cylinder. Fixture pads are attached to the octagon side walls of the compartment just inside the door opening.

Fixtures are in the form of grids, which fit attached pads. After fixture is placed inside the cylinder, it is held in position during the processing operation by the pads and by pressure of the closed door pushing it firmly into the contoured pad. Fixtured parts are held by the fixture grids to expose them to processing media.

Roto-Finish has reported that one of the outstanding features of the machine is that it is not necessary to remove processing media or solution when removing work load from the compartment of this machine.

8-Door Stationary Finishing Machine

For more data circle 26 on Reader Service Card

* * *

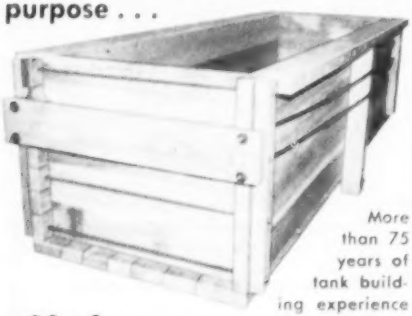
Carbonate Remover

A carbonate remover, Wes-X 150*, has been developed by the Electroplating Projects Department of Westinghouse Electric Corporation, P.O. Box 2099, for use in any proprietary alkaline cyanide plating process in which removal of carbonates is desirable. This carbonate remover precipitates carbonates in exchange for cyanide ions. It also assists in the elimination of certain contaminants.

The carbonate remover can be used in conjunction with hydrated lime to maintain optimum concentration of hydroxide and free cyanide without alkali metal cyanide or hydroxide additions. It is a source of cyanide ions

*Reg. Trade Mark
Westinghouse Electric Corp.

WOOD TANKS
for every plating and pickling purpose . . .



More than 75 years of tank building experience

Kalamazoo

CUSTOM BUILDS TO FIT YOUR NEEDS

Bring your problems to Kalamazoo—get tanks you can depend on for years and years.

Kalamazoo TANK and SILO CO.

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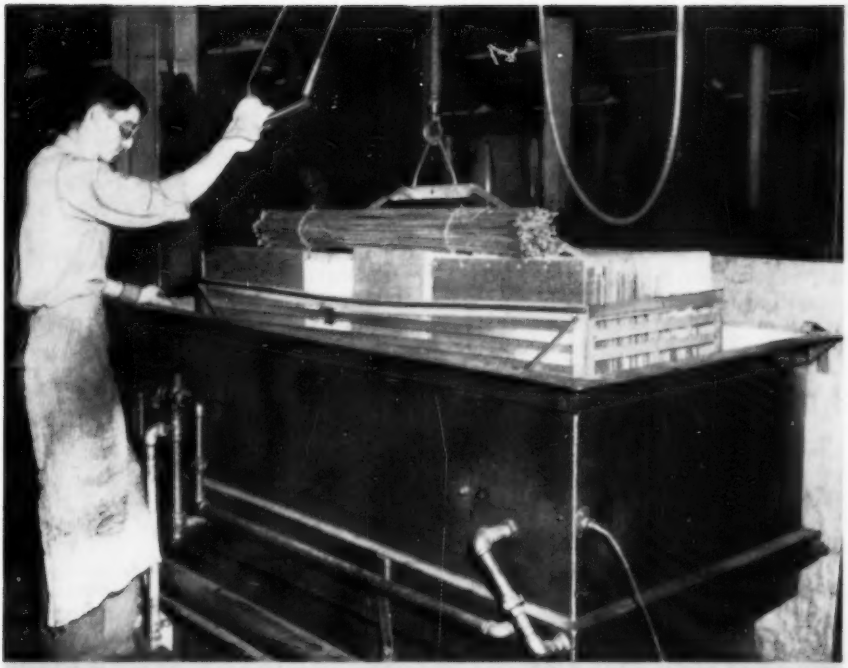


Want more cleaning at lower cost?

Use Nialk® TRICHLORethylene

Send for free illustrated booklet, NIALK TRICHLORethylene; contains valuable data on the use and handling of this chemical.

The high solvent power of NIALK TRICHLORethylene makes it one of the most efficient metal degreasing agents available today. This plus its recoverability for re-use proves it more economical for your cleaning and degreasing processes. Characterized by uniform quality and high chemical stability, this nonflammable solvent may be used in vapor degreasing or as a direct dip rinse.

Choose NIALK TRICHLORethylene for greater cleaning power per gallon.

NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N. Y.

Plant: Niagara Falls, N. Y.

For more data circle 198 on Reader Service Card

when complexing metal cyanides in both sodium and potassium types of plating solutions.

Use of the product can also eliminate the necessity for batch treating the entire solution. Only a small portion of the solution requires treatment at one time. The material is supplied in formulations for either sodium or potassium solutions.

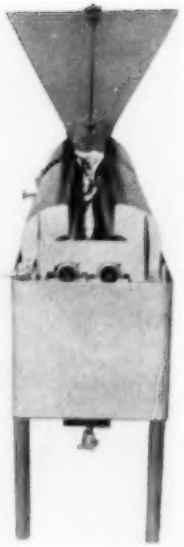
For more data circle **29** on Reader Service Card

★ ★ ★

Dimensional Separator

A Dimensional Separator designed for separating processed parts from tumbling media has been announced by Tumbling Sales and Service Co., 18 Beech St., Byram, Conn.

The Esbec Dimensional Separator features micrometer type controls for changes in size and rate of flow, as well as adjustable hopper feed control and speed changes. The machine is powered with a 110 volt single phase, ¼ h. p. motor, and can be operated from any wall outlet, making relocation simple.



Esbec Dimensional Separator

Separations such as the following are possible with this equipment: Needles and needle-like parts from steel balls; non-ferrous parts from chips of the same general size; ferrous parts from ferrous media; flat parts or chips from round ones; thin flat shapes from thick pieces of the same length and width; dissimilar parts which have been processed in the same load for production reasons; dissimilar parts which have been mixed by accident; flat chips which cannot be screened from the chip load but which are subject to wedging in parts; mixed loads of steel media to eliminate sizes which might wedge but which cannot be screened.

For more data circle **30** on Reader Service Card

★ ★ ★

Filter Paper

The National Filter Media Corp., 1717 Dixwell Ave., (Hamden), New Haven, Conn., has announced a neoprene impregnated filter paper with a wet bursting strength of 75 pounds per square inch or more. This paper shows good chemical resistance, is free

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle **199** on Reader Service Card

flowing, and in many applications it can replace cloth or extend cloth life, the manufacturer states. Super-Netone filter paper is available in several weights, plain or crepe finish. Samples are available on request.

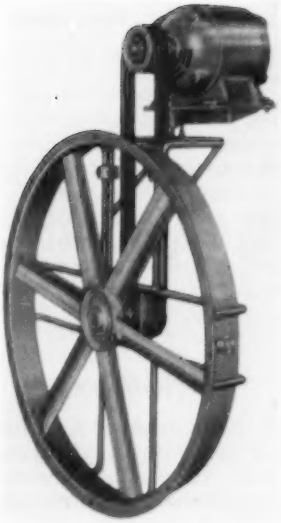
For more data circle 31 on Reader Service Card

★ ★ ★

Exhaust Fan

The Series "R" belt driven exhaust fan has been added to the line of exhaust fans built by the M & E Manufacturing Co., 2571 Winthrop Ave., Indianapolis, Ind.

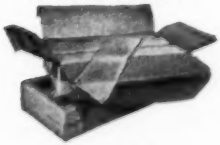
The unit is available in a complete range of sizes, 12 through 48 inches in diameter, with capacities from 900 to 38,000 c.f.m., suitable for operation against static pressures up to 1½



Series R Exhaust Fan

For Dust Free Finishes!
BOND TACK CLOTH

IN ROLLS
Cut off any size piece to use as needed.



IN BULK
Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

Now Available in Rolls or Cut Bulk—White or Gold
In Three Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

BOND CHEMICAL PRODUCTS CO.
"The Tacky Wiper Specialists"
2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

For more data circle 200 on Reader Service Card

inches. Design features include a non-sparking, corrosion-resistant cast aluminum blade, sealed ball bearings and adjustable motor mount support.

The Series "R" exhaust fan is designed for operation with any standard motor of the proper rating, and is available with or without motor.

For more data circle 32 on Reader Service Card

★ ★ ★

Work Gloves

Work gloves made of a combination of cotton and DuPont nylon have been introduced for use in polishing and filling operations. Said to give good resistance to abrasion, these gloves have been tested extensively in automobile assembly plants, and have been found to give long wear. The tests also showed that gloves with extra long fingers tended to wear excessively at the finger tips, thus shortening the life of the glove. Work gloves offering the advantages of the nylon-cotton blend are available from the Tex-sun Glove Co., Corsicana, Texas, and Warlong Glove Manufacturing Co., Conover, N. C.

For more data circle 33 on Reader Service Card

★ ★ ★

Disposable Plating Solution Container

Seymour Manufacturing Co., Franklin St., Seymour, Conn., has announced the availability of nickel plating solutions in a fiberboard container containing four individual one gallon bottles. The container is non-returnable.

Disposable Plating Solution Container

Advantages cited for this type of container are easier stacking in less space; convenience in handling the smaller units; and simplification of inventory problems.

Large volume users will continue to receive the Seymour bright nickel plating solutions in 5 gallon carboys, but the disposable units will be used wherever possible.

For more data circle 34 on Reader Service Card

For more data circle 201 on Reader Service Card

Thermodynamic Steam Trap

A steam trap which uses the kinetic energy of steam to close the valve has been announced by Sarco Co., Inc., Empire State Bldg., New York, N. Y.

The only moving part is the valve head, a solid heat-treated stainless steel disc. The same head and seat are used for pressures to 600 p.s.i. and temperatures up to 950 deg. F.

Operating characteristics of the Thermodynamic trap are listed as follows: closes tight on no load, and operates against a back pressure up to 50 per cent of its inlet pressure; discharges condensate at saturated steam temperature as rapidly as it forms; can vent large volumes of both air and air-steam mixtures; the starting load capacity is very high, but it operates equally well with light loads or no load; is not affected by pressure variations.

The design and metals used enable this steam trap to withstand superheat, water-hammer, vibration and corrosive condensate.

For further information, write Sarco Co., Inc., Dept. P., Empire State Bldg., New York 1, N. Y.

For more data circle 35 on Reader Service Card

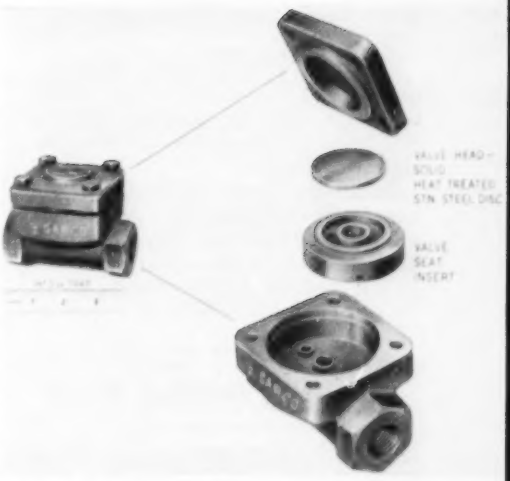
★ ★ ★

Cleaning Solvent

Development of improved Turco-Solv, a safety solvent for use in all cleaning operations, has been announced by Turco Products, Inc., manufacturers of specialized industrial cleaning compounds.

Improved Turco-Solv features good solvency for fast, effective removal of grease, oil and carbon film. It is non-explosive and non-flammable (flash point over 200 deg. F., TCC).

Turco-Solv combines the least toxic solvents available, consistent with safety from fire hazard.



Sarco Thermodynamic Steam Trap and its parts

It evaporates quickly, and dries completely, without leaving residues to im-

Fewer Fumes
Safer, Easier Handling
when you pour *acid* with

PNEUMATIC ACID PUMPS

A. Bulb, hand type B. Foot press type

Starts and stops quickly; provides steady flow under safe low pressure.

Available in lead tube, hard rubber tube, aluminum tube, or all-round plastic tube.

Cheerfully we will mail detailed catalog on PUMPS, CARBOY SAFETY POUR SPOUTS, SAFETY CARBOY TILTERS.

We will also answer any specific problems—NO OBLIGATION

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77 South 5th Street, Brooklyn 11, New York
Telephone: EVergreen 8-5502

For more data circle 203 on Reader Service Card

pair paint adhesion or to pick up carbon dust, metallic particles or other contaminants. No after-neutralization is required.

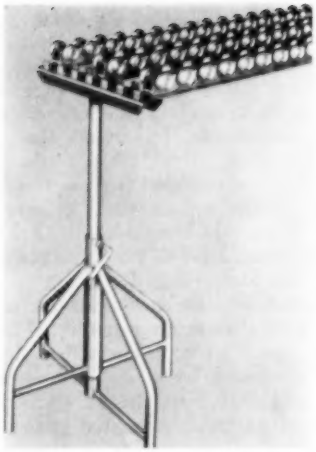
Turco-Solv may be used for hand wiping of small parts, pre-cleaning prior to flaw-detection operations or for final clean-up of fabricated units, such as automobiles and appliances.

For more data circle **36** on Reader Service Card

★ ★ ★

Four-Leg Folding Stand

The Alvey-Ferguson Company, 646 Disney St., Cincinnati, Ohio, has announced the development of a four-leg folding stand of patented design, to support all types of portable conveying equipment. Designed primarily for use with AF Live Rail wheel conveyor,



Stand used to support portable conveyors

it can be supplied for use with roller gravity, other types of wheel conveyors, and many applications requiring a strong, portable support.

It folds flat (less than 3 inches) for convenient carrying, stacking and storage, and is especially suitable for trucks or wherever space is at a premium. Tubular construction provides a lightweight, portable, yet sturdy support.

The stand is adjustable and may be raised or lowered to the desired height. The unit may also be supplied with casters, with or without brakes.

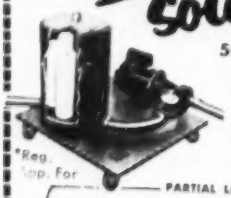
For more data circle **37** on Reader Service Card

★ ★ ★

Heat Exchanger for Anodizing

Nocordal shell and tube heat exchangers have been designed by Heil Process Equipment Corp., Cleveland 11, Ohio, for use in maintaining the low (20 to 30 deg. F.) operating temperatures required for the hard coating type anodizing processes. Standard units, which have been successfully used in heating nickel, acid copper,

Filter your solutions!



50-2400 GAL/HR.

Model ASI-600. Cap. 600-900 g/hr. Sethrin* Resin Filter Assembly. Stainless Centrifugal Pump. Totally Enclosed Motor. Portable. Wt. 150 lbs. 2'x2'x2'.

*Reg. Imp. For

PARTIAL LIST OF MODELS

Model	Rated Capacity	Overall Size	Weight
LSI-5	50 gal./hr.	11"x14"x12"	30 lbs.
LSI-10	100 gal./hr.	12"x16"x16"	40 lbs.
ASI-300	300 gal./hr.	2'x2'x2'	125 lbs.
ASI-600	600 gal./hr.	2'x2'x2'	150 lbs.
RLS-1200	1800 gal./hr.	2'x2'x3'	200 lbs.

SERVICE . . . Filters practically any acid or alkaline solution from pH 0 to pH 14; removes particles down to one micron in size. Strainer stops metallic objects.

DESIGN . . . **Filter Assembly** fabricated of stainless steel 316, high temperature lucite, rubber-lined, Haveg or Sethrin* resin. **Filter Tubes** of cotton, dynel, porous stone or porous carbon. **Pumps** fabricated of Hastelloy, stainless 316 or plastic, centrifugal or self-priming. **Motors** drip-proof, totally enclosed, or explosion proof, 110 or 220 volt, single or three-phase, 50 or 60 cycle, sleeve or ball bearing. **Hose** — special acid and alkali resistant. **Base** — Linen Phenolic laminate on rubber tire ball bearing casters.

Sethco MANUFACTURING COMPANY

70-72 Willoughby Street • Brooklyn 1, N. Y.

For more data circle **205** on Reader Service Card

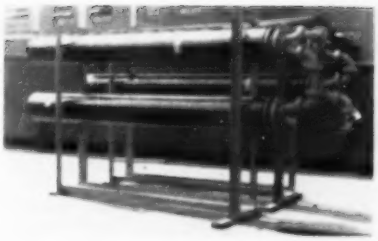
iron and other plating baths, as well as sulfuric and muriatic acid pickle solutions, are adapted readily to this cooling service.

A relatively low area of heat transfer surface is required, as the heat transfer rate obtained from these graphite external heat exchangers is high. A minimum size tank is also possible, as no tank space is taken by the external exchanger, and the possibility of stray current attack is minimized.

Special cork insulation is employed in place of the normal asbestos-type insulation. Rubber-lined pipe supplied with the assembly is cork insulated.

For further information, write Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11, Ohio.

For more data circle **38** on Reader Service Card



External heat exchanger used for maintaining low operating temperatures for anodizing.

REPRINTS AVAILABLE

A limited number of reprints of the following articles from PRODUCTS FINISHING are available to readers without charge.

"Chemical Surface Treatment Extends the Durability of KoolVent All-Weather Aluminum Awnings,"
by Norman P. Gentieu,
American Chemical Paint Company,
Ambler, Pa.

"Cleaning and Phosphatizing International Harvester Truck Cabs."

"Conveyorized Shell Finishing,"
by Ezra A. Blount, Editor.

"Effect of Plating Thickness on Screw Thread Dimensions."

"Filter Out Your Plating Rejects,"
by Ezra A. Blount, Editor.

"Finishing Floor Registers and Grilles at The Auer Register Company,"
by Ezra A. Blount, Editor.

"Finishing Refrigerators with Hot Sprayed Enamel,"
by Frank L. Bonem.

"Flow Coating Range and Heater Parts,"
by Ezra A. Blount, Editor.

"Galvanizing Company Boosts Efficiency in New Plant."

"High Production and Safety Planned Into Sheet Metal Finishing System,"
by A. G. Trivison.

"Hot Spray Finishing of Machine Tools,"
by Roy W. Hill,
Besly-Welles Corporation.

"How the Paint Warmer Aids Finish Application and Quality,"
by Lee Turner.

"How to Finish Metal Products by Vacuum Metallizing,"
by J. Gordon Seiter.

"Modern Masking Materials and Methods for Fabrication and Spray Finishing,"
by Arthur P. Schulze.

"Plating Die Castings in Conveyorized Plant,"
by Ezra A. Blount, Editor.

"Work Simplification Programs for the Metal Finisher,"
by S. J. Fecht.

PRODUCTS FINISHING, 431 Main Street, Cincinnati 2, Ohio

News of the Industry

NEW PLANTS

Foundations have been completed for a new manufacturing plant in Huntsville, Ala., owned by the **NORTON COMPANY**, Worcester, Mass.

The new $1,285,000 plant will manufacture fused magnesia, fused zirconia, boron carbide, plus special materials for the Atomic Energy Commission. The plant will supplement the Norton Company's electric furnace facilities in Chippawa, Ontario, Canada.

The plant will consist of three manufacturing areas totaling 43,000 square feet and an office area of an additional 4,000 square feet. The entire plant will be on one story with brick construction for the office and transite for the manufacturing areas.

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PELRON CORPORATION has officially occupied a new office, laboratory, and manufacturing plant at 7847 West 47th Street, Lyons, Illinois.

Paul E. Pelletier, president, reports that the new laboratory facilities will enable Pelron Corporation to continue to expand its research and product development program. The new factory consists of modern chemical handling equipment and storage facilities. The expansion of laboratory and production facilities will enable the corporation to manufacture new chemicals and compounds, in addition to the regular line of products which includes phosphatizing compounds, paint strippers, and rust preventives.

Mr. Pelletier further stated that even though the corporation's entire factory and offices were wiped out by fire in 1954, the company was able to resume business, using emergency facilities, immediately after the fire, and continued to supply its customers during the period of reconstruction. He said, "The spirit of assistance and cooperation among employees, customers, and friends was most gratifying and enabled the company to carry on business almost as usual during the period of reconstruction. This same spirit should most certainly be an incentive to the corporation in carrying on its policy of growth and service to its customers."

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T. Curtis McKenzie, president of **KLEM CHEMICALS, INC.**, Dearborn, Mich., has announced the opening of **KLEM CHEMICALS, INC. OF CALIFORNIA**, located at 1905 North Central Ave., El Monte, Calif., and the appointment of **JACK BORKMAN** as general manager.

The new plant is equipped to handle the West Coast production of both liquid and powder metal cleaning, rust removing, phosphate coating, paint removing and spray booth compounds. It also has laboratory facilities for maintaining service on commercial problems.

★ ★ ★

A new addition to the Kansas City industrial scene is the plant of **MISSOURI SOLVENTS & CHEMICALS CO.** Solvents and chemicals will be distributed from a new warehouse and bulk storage plant in the East Bottoms section.

New office, laboratory, and plant of Pelron Corp.

Among the products available are petroleum naphthas, normal and secondary alcohols and acetates, ketones, aromatic solvents, chlorinated solvents, plasticizers, waxes, stearates, and Naval Stores, including turpentine, pine oil, rosin and rosin derivatives.

E. J. SAAKE will be in charge of the Kansas City plant, at 2522 Nicholson Ave. Formerly Mr. Saake was associated with the St. Louis office of Missouri Solvents & Chemicals Co.

COMPANIES

ALLIED RESEARCH PRODUCTS, INC., Baltimore, Md., has announced that the full line of Iridite chromate conversion coatings for non-ferrous metals will be on display at Booth 962 at the Metal Show in Philadelphia, Oct. 17-21. The full line includes finishes for corrosion protection, paint base and decorative value on zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. Samples of typical finished parts will be displayed and the company's staff of sales engineers will be on hand to greet visitors.

In addition, the complete line of ARP plating brighteners and chemicals will also be represented in the exhibit.

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Safety statistics compiled by **PITTSBURGH PLATE GLASS COMPANY** revealed that the month of August terminated outstanding safety records for two Pittsburgh Plate manufacturing units, T. R. Donoghue, manager of safety and plant protection, has announced.

The Ditzler Color Division at Detroit, Michigan, recorded 1,004 no-accident days during which employees completed 2,952,345 man-hours since November 13, 1952. A lost-time accident on August 15 ended the excellent record. Earlier this year, the Ditzler unit received the National Safety Council's "Award of Honor" and Pittsburgh Plate's "Certificate of Honor."

Mr. Donoghue also announced that the safety record of the Lake Charles, Louisiana, plant of Columbia-Southern Chemical Corporation, a wholly-owned subsidiary of Pittsburgh Plate, ended August 10. Lake Charles employees worked 263 no-accident days during which they completed 682,157 man-hours since the last disabling injury on November 19, 1954.

JOHN F. SIEFEN, president of the J. J. Siefen Company, has resigned his presidency of the company and is no longer connected with the **J. J. SIEFEN COMPANY**.

Mrs. I. E. Siefen has announced that the company standards and policies will not change and business will be conducted as before.

★ ★ ★

SHARPLES CHEMICALS, INC., has been dissolved as a corporation. It is now an operating division of the **PENNSYLVANIA SALT MANUFACTURING CO.**

Sharples was acquired by Pennsalt Chemicals through an exchange of stock in 1951. Operating plants in Wyandotte, Michigan and Houston, Texas produce a wide variety of organic chemicals for the rubber, petroleum, pharmaceutical, mining, chemical, surface coating and natural gas industries. Its operations will continue under the direction of **LEE H. CLARK**, general manager.

★ ★ ★

The **BINKS MFG. CO.** has broken ground for an expansion of its plant in Franklin Park, Ill. The addition, which increases the area of the present plant by 15,552 feet, will be completed in December 1955.

The new extension will house the enlarged operations of pipe fabrication, air compressor manufacturing facilities, and the sheet metal engineering department.

The new building is being constructed by the Ashland Construction Company of Chicago.

Burke Roche (left) president of the Binks Mfg. Co. and Edward Simon, president of Ashland Construction Company, watch as ground is broken for the expansion of a Binks plant

Eight additional metal finishing firms have been appointed franchised applicators of Unichrome 5300, a sprayable plastisol made by **UNITED CHROMIUM DIVISION OF METAL & THERMIT CORPORATION.**

The newly appointed applicators are: Barber-Webb Company, Los Angeles, Calif.; Crane Equipment & Supply Co., Waterbury, Conn.; Kaybar, Inc., Detroit, Mich.; Lithcote Corp., Norwalk, Conn. and Melrose Park, Ill.; Metal Cladding, Inc., Buffalo, N. Y.; Metal Weld, Inc., Philadelphia, Pa.; Paterson Rubber Co., Paterson, N. J.; and Rack Processing Co., Dayton, Ohio.

Unichrome 5300 was developed to permit spray application of vinyl plastisol films in a single dry seamless coat in thicknesses up to 30 mil without sagging.

For further information, write United Chromium Division, Metal & Thermit Corp., 100 East 42nd St., New York, 17.

★ ★ ★

Flood damage to a large amount of strip steel urgently needed in the recently inundated New England area was literally given the brush off by the **INDUSTRIAL DIVISION OF THE FULLER BRUSH COMPANY.**

When the Dolan Steel Co. of Bridgeport, Conn., invited 110 customers in the flood area to send rust and mud-covered steel coils to its yards for cleaning, the company was not prepared for the truckloads of metal strips which arrived.

A rush call to the Fuller Brush Company brought an immediate response from the engineers who did test runs of the rusty and muddy strips in the laboratory. They then dismantled a partially completed machine which they adapted for metal strip cleaning by building in two fourteen inch diameter cylinder brushes of crimped steel wire made up of gangs of Fullanchor wheel brushes, normally used for deburring and finishing.

Twenty-four hours after the Fuller Brush Co. received the emergency call, the machine was finished. General Electric Supply of Hartford provided switches and starters, and U. S. Motors of Milford completed two 15 h.p. motors to furnish power for the machine, which speeded up cleaning of the coils and made it possible for companies to start production again with the reclaimed steel strips.

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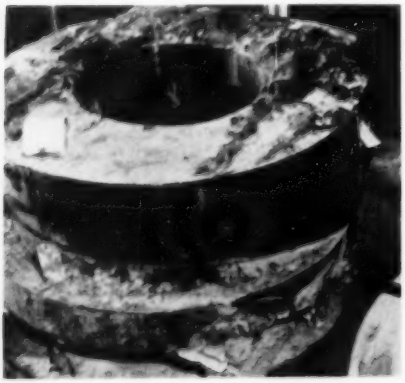
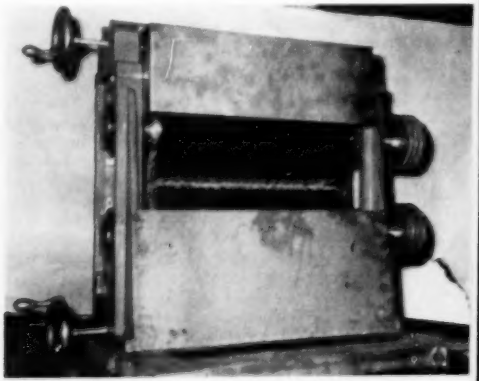
Elevation of **THE DOW CHEMICAL COMPANY** Minneapolis and Cincinnati field offices to full sales office rank and plans for opening a new sales office in Buffalo have been announced by Donald Williams, vice president and director of sales.

Mr. Williams also announced the advancement of **MARION E. TELLER** to manager of the Minneapolis office, **EDWARD C. EARLEY** to manager of the Cincinnati office and **EUGENE L. MARTINEZ** to manager of the Buffalo office, which is expected to open late this year.



Mud covered, rusted strip steel coils after the flood. They are to be cleaned and returned to companies in flood area so that stamping operations can resume as soon as possible.



This machine was designed and built by the Fuller Brush Company to strip rust and mud from truckloads of steel coils damaged by flood waters from recent eastern storms.

The **DETREX CORPORATION** of Detroit has announced the development and the elaborate field testing of a new product designed to eliminate the use of cyanides and alkaline type neutralizers.

It has been reported by the steel industry that this product has not only enhanced the appearance (uniform color) and the saleability of the neutralized sheet, but has imparted a rust protective surface as well.

Detrex CX, as the product is known, has eliminated many of the control procedures which have been necessary in neutralizing pickled sheets. The processing of Detrex CX has been found to be so simple that control can be safely assigned to operating personnel.

This product will be exhibited, and literature available, at the National Metal Exhibition in Philadelphia in Booth Number 1205.

★ ★ ★

A line of pure oxide refractory coatings which has commercially proven ability to protect metal parts from high temperatures has been unveiled by the **NORTON COMPANY** before an audience of technical editors in Worcester, Mass.

Heat engines have been developed to the point where most metals melt or lose their strength. At this transition point in engineering design, substitute materials such as ceramics can sometimes be used. In other cases, protective coatings can be applied to the metals. Norton Rokide pure oxide coatings have been successfully tested in a wide range of field applications for protecting metals from the effects of heat and corrosion.

Rokide coatings are of two types: aluminum oxide coatings for a wide range of base materials, particularly metals, and silicon carbide for use on graphite base materials.

Rokide aluminum oxide coatings are applied in a molten state by means of a metallizing-type spray gun. The oxide is fed into the gun in rod form at a controlled rate. Thickness of coating is usually between 5 and 50 thousandths of an inch, although coatings 100 thousandths of an inch thick have been applied. The coating can be applied to practically any material, but it is most commonly applied to metals. It is hard, has good wear and chemical resistant qualities, is a non-conductor of electricity, and weighs about half as much as steel. Once applied to metal, the oxide coating has good resistance to chipping or flaking.

Silicon carbide coatings have been applied successfully only on graphite shapes. While graphite has many desirable properties for use in rockets, it will not withstand high temperatures or erosion adequately. However, a thin coating of silicon carbide provides needed protection with negligible weight increase.

Norton products for reaction motors have the following general properties and characteristics: high melting point, hard, relatively chemically inert, good mechanical strength, resistance to corrosion, dimensional stability, low coefficient of expansion, and resistance to mild impact.

The following are a few applications that have shown promise: In rockets: nozzles, motor tube linings, thermal barriers. In guided missiles: vanes, skin protection, motor components. Ramjets: tail pipe linings. Gas turbines: inner combustion chamber lining, cross fire tube lining, flap nozzle coating, housing and shroud ring insulation. Miscellaneous: burner parts protection, electrical insulation and thermo-couple tube protection.

Rokide coatings and the method of application are both protected by patents. Because of the potential importance of this process to the national defense, Norton Company will make this process available, under license, on a non-exclusive basis to all manufacturers.

Automatic application of Norton Rokide "A" pure oxide coating to inside of ramjet parts.

J. J. Manderscheid, president of **THE MANDERSCHEID CO.**, Chicago metal finishing equipment and supply organization, has announced that after October 1 the company will be located in more modern quarters at 210 S. Clinton St., Chicago 6, Ill. The new telephone number will be State 2-8662.

★ ★ ★

ING. SANTIAGO SOTO MARTINEZ, Mexico City, has been appointed Mexican representative for The W. W. Sly Mfg. Co., Cleveland, Ohio.

Mr. Martinez has had extensive experience in metallurgy and in the installation and operation of industrial equipment. He formerly served as manufacturers' representative for manganese, steel, babbitts, welding materials and cement manufacturing equipment.

Mr. Martinez was educated in the United States and received his Bachelor of Science from Michigan College of Mines.

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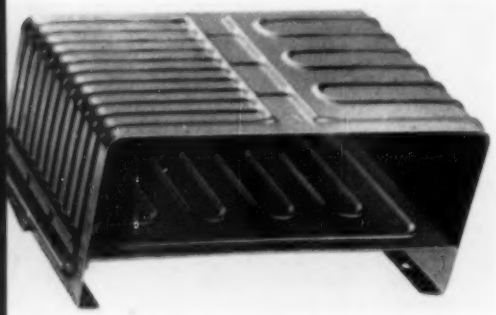
Domestic evaporators being manufactured by the **HOUDAILLE-HERSHEY REFRIGERATION DIVISION** of North Chicago, (Great Lakes) Illinois, are now being electro-zinc plated, then completed with a coating which is said to possess exceptional smoothness and lustre.

It is stated that the plating operation provides a durable and ductile basis metal protection, while the finish coat, developed in the DuPont laboratories, provides excellent humidity resistance.

Certain basic colors, in addition to white, are available in the finish, which is reported to have excellent protective qualities against corrosion and abrasion.



Houdaille-Hershey Refrigerator Evaporator

A five-tank cleaning and zinc phosphating line in operation will be featured by **OAKITE PRODUCTS OF CANADA, LTD.**, at Booth 1767 at the National Metal Exposition in Philadelphia's Convention Hall, October 17 through 21. Steel panels will be alkaline cleaned, rinsed, phosphated with Oakite CrysCoat HC, rinsed, and given a final Oakite CrysCoat FH rinse to produce a dense, paint-gripping coating.

Products for removing zinc chromate primers from aluminum, alkaline rust removal, acidic barrel finishing, and pickle control, and the Oakite Solution-Lifting Steam Gun also will be shown.

E. F. Connolly, the Oakite Philadelphia division manager, will be in charge of the booth. He will be assisted by technical service representatives H. Frohwitter, W. M. Bliss, H. P. Jacques, C. S. Anderson, J. S. Todd, W. G. Boaeuf, W. Beckhardt, J. M. Hite, R. C. Williams, and B. F. Fay.

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The first positive steps in the direction of an over-all program to control dust and air pollution emanating from industrial plants have been reported by **HENRY M. MARGOLIS**, president of **SCHMIEG INDUSTRIES**, Detroit, Mich., a major producer of industrial equipment for the removal of dust and fumes.

Mr. Margolis stated that the U. S. Department of Health, Education and Welfare as well as organizations set up in individual communities throughout the nation are cooperating to solve the growing air pollution menace.

An encouraging development, the head of Schmieg Industries, Inc., said, is the growing public interest in finding a solution to the air pollution problem. He reported that more than one hundred laboratories throughout the country are now working on the problem.

Schmieg Industries, Inc., designs, manufactures and installs equipment and systems for dust and fume removal.

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DR. WILFRED ROTH has announced the formation of a new company, the **ROTH LABORATORY FOR PHYSICAL RESEARCH**. This organization, located at 1240 Main St., Hartford, Conn., succeeds Rich-Roth Laboratories. **STANLEY R. RICH**, the other partner of Rich-Roth Laboratories, has become technical director of General Ultrasonics Co., a recently organized corporation. Dr. Roth is a director and consultant to this firm.

Bill Wilson

Frank Wilcher

Cincinnati has been selected as headquarters of a new district sales territory for the Metal Processing Chemicals Dept. of **PENNSYLVANIA SALT MFG. CO.**

Directed by district sales manager **BILL WILSON**, the staff will include sales representatives **JACK CRAM**, **FRANK WILCHER** and **CLAY BRAHM**, and technical services representative **ALLAN LENIO.**

Included in Pennsalt's line of metal processing chemicals are Foscoat and Fosbond products and a variety of metal cleaners and special lubricants.

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ATLAS MINERAL PRODUCTS, Mertztown, Pa., has announced that all metal working plants employing pickling operations will be given the opportunity to test Atlas corrosion proof cements through a trial offer of this material. Anyone using pickling in metal working operations can obtain a sample briquette from the company. The briquette will be joined with acid proof cement, designed for the type of operation and solution being used. The company recommends that the sample be suspended in the tank for as long as desired. Then the brick should be examined carefully. If the cement is to be successful in actual installation, the sample briquette should show no sign of deterioration, the manufacturer states.

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THE THERMO-PANEL DIVISION OF DEAN PRODUCTS, INC., 616 Franklin Avenue, Brooklyn 38, N. Y., will feature Thermo-Panel Plate Coils at the 37th National Metal Exposition in Philadelphia, Pa., Philadelphia Convention Halls, October 17-21, 1955, in Booth No. 930.

Light in weight, Thermo-Panel Plate Coils provide efficient heat transfer and are available in standard sizes, as well as special sizes and shapes to meet individual requirements. They are obtainable in a wide range of materials, including stainless steel, monel and other special alloys and finishes. They are available in parallel-type for steam application, or in series-type for use with cooling or heating fluids.

The Dean exhibit will feature a technical clinic for the discussion and study of application of Dean Thermo-Panel plate coils. A comprehensive application portfolio will be on display for inspection and study by visitors. Dean engineers will be in attendance to confer on new projects and problems.

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RAMCO EQUIPMENT CORPORATION will feature a display of degreasing equipment at the National Metal Exposition in Philadelphia. The display will include ultrasonic degreasing equipment, and will be similar to the Ramco display at the Industrial Finishing Exposition, held in **June.**

Ramco Equipment Corporation display of degreasing equipment, to be shown at the National Metal Exposition.

NEW POSITIONS

Oakite Products, Inc., manufacturers of industrial cleaning and metal treating materials, has announced the appointment and transfer of several technical service representatives.

WILLIAM H. DUCKWORTH, formerly a production foreman with General Motors, is now serving the metal industries in South Milwaukee. He replaces **R. J. BALTZELL**, who has been transferred to Elmira, New York.

GEORGE F. BECKER is the new representative in Kansas City, Missouri, replacing **OTTO W. JOMMERSBACH**, transferred to the Brooklyn-Queens area in New York City.

RAYMOND ABAZIA, formerly a senior chemist with Wright Aero Division, and a member of the American Electroplaters' Society, is now representing Oakite among the metal industries in Newark, New Jersey.

H. WILDER, transferred to the Akron, Ohio, territory, has been replaced in La Crosse, Wisconsin, by **R. P. LIND**, and **W. D. HUDSON**, transferred to Peoria from Topeka, Kansas, is being replaced by **D. R. COWELL**.

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C. O. PETERSEN has been appointed district sales engineer in Pittsburgh and surrounding areas including West Virginia, for The W. W. Sly Mfg. Co., Cleveland, designer and manufacturer of dust control systems, industrial ovens, tumbling mills and blast cleaning equipment. He is located at 1300 Clark Building, Pittsburgh.

A lifelong resident of Pittsburgh and Registered Mechanical Engineer in the State of Pennsylvania, Mr. Petersen is a member of the Pittsburgh Chapter of the American Society of Tool Engineers. He also belongs to both the Pittsburgh and Westmoreland County Chapters of the National Society of Professional Engineers. He is a charter member of the latter organization.

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C. ROGER SUTTON, senior metallurgist at the Argonne National Laboratory of the U. S. Atomic Energy Commission for the past five years, has joined the Development and Research Division of The International Nickel Company, Inc., as a member of the Stainless Steel and Heat Resistant Alloys Section, according to an announcement by F. L. LaQue, division vice-president and manager.

Mr. Sutton is a member of the American Society for Metals, American Institute of Mining and Metallurgical Engineers, American Welding Society, Franklin Institute, Scientific Research Society and the American Institute of Chemical Engineers.

ROBERT G. PARKER has joined R. O. Hull & Company, Inc. of Cleveland, Ohio, in the position of technical service representative. He will work out of the New Haven, Conn., office of Enthone, Inc., the distributor for Rohco products in New England and eastern states.

Mr. Parker spent the past twelve years as plating foreman at Casco Products Co. Currently, Mr. Parker is secretary, Bridgeport Branch, A.E.S.

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Five assignment changes in the field sales and service organization of Diamond Alkali Company have been announced by W. H. McConnell, vice president in charge of sales.

ROBERT R. WOOD, a member of the New York sales staff since January, 1949, has been promoted to the position of special staff assistant in the Sales Department at Cleveland.

His successor at New York is **C. ROBERT POWELL**, who has been transferred from Cincinnati, where he is being succeeded by **CHARLES H. GILLESPIE** as sales representative in Louisville.

CHARLES B. KAYSER, on the Cincinnati sales staff since May, 1948, will now represent the company at Columbus, with headquarters at Columbus, Ohio.

LOUIS P. LAMBROS, formerly of the Central Order Department of Diamond Alkali, has been named to succeed Mr. Kayser in Cincinnati.

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The appointment of **MILTON T. SCHIMMEL** to the post of general manager of Conforming Matrix Corp. has been announced by H. E. MacArthur, president. Mr. Schimmel came to Conforming Matrix Corp. in 1948 as engineering sales manager. He has specialized in mold design and has had wide experience in production spray painting and the designing and building of special equipment.

GERALD D. MINNICK has been appointed plant superintendent. Mr. Minnick has an extensive background in tool engineering. He joined the company in 1951, first handling field service, and in 1953 became sales engineer.

Conforming Matrix Corp. manufactures spray painting and masking shields, tools and fixtures, mask washing machines, and automatic air-operated, hydraulically controlled machinery for the spray painting of parts on a mass production basis.

OLIVER A. GOTTSCHALK, formerly assistant to the president of The Carborundum Company, has been elected treasurer-controller at the regular monthly meeting of the Board of Directors. **GEORGE J. ZIMMERMAN**, staff assistant for management controls, was named assistant to the president.

In his new executive post, Mr. Gottschalk assumes treasurer-controller duties for The Carborundum Co.; The Canadian Carborundum Co., Ltd.; The Carborundum Metals Co., Inc.; Canada Sand Papers, Ltd.; the R. C. Bowers Co.; the Curtis Machine Corp.; and the Carborundum Co. of Puerto Rico.

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ARTHUR E. DARCY has been appointed manager of the Machine Methods Department of the Coated Abrasives Division of The Carborundum Company, according to an announcement by W. H. Wendel, vice president of the company.

As manager of the Machine Methods Department, Mr. Darcy will expedite dissemination of information to Carborundum salesmen relative to the various types of abrasive belt machines and advise them concerning machine recommendations to customers. He will also collaborate with abrasive belt machine builders and offer recommendations for adaptations of their abrasive belt machines to the needs of industry.

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ELMER J. DRECKMAN has been appointed general sales manager of James B. Day & Co., Chicago, by Arthur T. Day, president. Mr. Dreckman has also been elected secretary of the company by the board of directors, and has bought a financial interest in the company.

Mr. Dreckman has been connected with the industry since 1924, and is a past president of the Paint Salesmen's Club of Chicago, and the National Paint Salesmen's Association.

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RUSSELL L. MAYCOCK has been appointed director of the Shell Chemical Corporation, Houston research laboratory, C. W. Humphreys, vice president, manufacturing, has announced.

Mr. Maycock is assistant manager of the physical chemistry department at the Shell Development Company Emeryville research center. He replaces J. Anderson, who has been named director of the research laboratory located at the Shell plant in Torrance, California.

J. A. CAIRNS has been appointed sales manager of Allied Research Sales Corp., Baltimore, Md., it has been announced by L. C. Kingsbury, vice president-in-charge-of-sales. Allied Research Sales Corporation is the marketing subsidiary of Allied Research Products Inc., manufacturer of the Iridite line of chromate conversion coatings for nonferrous metals, and ARP plating chemicals.

J. A. Cairns

Mr. Cairns joined the Allied organization in 1948. In his new capacity as sales manager, Mr. Cairns will have jurisdiction over direct sales districts as well as the distributor organization and the warehouse network.

Mr. Cairns holds a degree in Chemical Engineering from the Drexel Institute of Technology and is a member of the American Electroplaters' Society and the American Society for Metals.

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Appointments of **JOHN H. ISLAND** and **KENNETH E. WHITEKETTLE** as sales managers for the Baltimore Brush Division of the Pittsburgh Plate Glass Company have been announced by Alan B. Castator, general sales manager for the Baltimore, Maryland and Keene, New Hampshire brush plants.

Mr. Island has been named to supervise the Paint and Varnish Brush Department while Mr. Whitekettle will head Power Driven Brushes.

Assignment of **JAMES BALLARD** as special brush representative for the Baltimore Brush Division has also been announced.

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Appointment of **EDWARD R. FRANK** as assistant general manager of the Forbes Finishes Division of Pittsburgh Plate Glass Company has been announced by Charles H. Reed, general manager of the division. Also announced was the appointment of **FREDERICK F. RHUE** as division manager of sales service.

Ralph E. Pettit

RALPH E. PETTIT, former vice-president and works manager of the Chicago Thrift Etching Corporation, has been named technical advisor in the Metal Industries Department, The Diversey Corporation, Chicago, Ill. Mr. Pettit is well known throughout the metal working industry as first vice-president of the Chicago branch of the American Electroplaters Society.

In his new position with The Diversey Corporation, Mr. Pettit will work closely with the field sales force in solving difficult problems in the selection and application of processing chemicals in the metal industry.

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Appointment of **JOHN F. WHITCOMB** as general sales manager of the coated abrasives and related products division and **RICHARD L. SHEPPARD** as general sales manager of the cellophane tape division has been announced by Minnesota Mining & Manufacturing Co.

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William R. McFarland

Atlantic Compound Company of Waterbury, Connecticut has named **WILLIAM R. McFARLAND** president and general manager.

Under Mr. McFarland's direction a program of expanding production facilities is underway to meet the demand for greaseless polishing and buffing compounds in all grades and grit sizes.

Mr. McFarland had been with the Lea Manufacturing Company in various managerial capacities for several years.

Atlantic is now packaging greaseless compounds in foil lined fibre board containers as well as aluminum tubes.

CARLTON BATES has been appointed president of Solvay Process Division of Allied Chemical & Dye Corporation.

Mr. Bates has been executive vice-president of Solvay Process Division since 1952. He succeeds A. B. Chadwick, who is retiring after 44 years of service.

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CARL MAYER, JR., has become president of the Carl Mayer Corporation, succeeding the late Carl Mayer, Sr. Carl Mayer, Jr., vice president and general manager of the oven design firm since 1951, has been associated with his father in operation of the oven design firm for the past ten years.

SOCIETIES

Rudy Hazucha

An enviable record has been established by **RUDY HAZUCHA**, a member of the **CHICAGO BRANCH** of the **AMERICAN ELECTROPLATERS' SOCIETY**. Mr. Hazucha has never missed a meeting of the Chicago Branch since August 1915, a period of over 40 years. On one occasion he had to be on the West Coast on the meeting date and attended a meeting of the Los Angeles Branch. His record of attendance at consecutive A.E.S. Annual Conventions runs from 1917.

Mr. Hazucha has been associated for 21 years with the Clinton Company as technical sales representative. He is a past president of The International Fellowship Club, now the Metal Finishing Suppliers' Association, Inc.

In addition to his activities in connection with the Finishing Industry, and particularly the records of attendance which he has established, he has other distinctions. He has pitched a no-hit game as a semi-pro ball player, bowled a perfect game (300), and at present is captain of a top-flight Chicago bowling team. On several occasions he has come within inches of a hole-in-one on the golf course.

An educational grant of $300 has been made by the **FEDERATION OF PAINT AND VARNISH PRODUCTION CLUBS** to the Birmingham (England) Paint, Varnish & Lacquer Club, to assist in the Club's educational program which recently included the sponsorship of a series of lectures on "Paint Analysis."

These lectures were conceived and arranged by the Club's Program Committee and Dr. N. W. Hanson, who authored and presented the lectures at the University of Birmingham.

The Federation's check was presented to Charles W. Gilbert, Club president, at the meeting of May 5, 1955, by Walter W. Hoffman, the American Consul in Birmingham, who acted in behalf of the Federation.

The lectures have been printed in book form and copies will be made available, from Federation Headquarters to holders of the Federation's Paint Educational Aids Kit.

TRAINING COURSES

Courses in Electroplating

Brooklyn, N. Y. **BROOKLYN EVENING TECHNICAL HIGH SCHOOL.** Instructor: Louis Serota, 4495 Kings Highway, Brooklyn, N. Y.

Chicago, Ill. **ILLINOIS INSTITUTE OF TECHNOLOGY.** Instructor: J. M. Andrus, 3701 N. Ravenswood Ave., Chicago, Ill.

Cleveland, Ohio. **JOHN HAY HIGH SCHOOL.** Instructor: John B. Winters, 24324 Smith Road, Westlake, Ohio.

Hartford, Conn. **STATE TRADE SCHOOL.** Instructor: Harry Sanders, 32 Olive St., Newington, Conn.

Los Angeles, Calif. **UNIVERSITY OF CALIFORNIA EXTENSION DIVISION.** Instructor: Mitchell Raskin, 3034 Greenfield Ave., Los Angeles, Calif.

Newark, N. J. **NEWARK BRANCH, A. E. S.** For information contact Dr. Dodd Carr, Bart-Messing Corp., 229 Main St., Belleville 9, N. J.

New Haven, Conn. **NEW HAVEN COLLEGE.** Instructor: Edward F. Foley, 442 Elm St., New Haven, Conn.

Philadelphia, Pa. **TEMPLE TECHNICAL INSTITUTE.** Instructor: Dr. Samuel Heiman, 5155 Westford Rd., Philadelphia, Pa.

Providence, R. I. **CENTRAL SENIOR HIGH SCHOOL.** Instructor: Joseph A. Smith, Jr., 116 Wyoming Ave., Warwick, R. I.

Providence, R. I. **UNIVERSITY OF RHODE ISLAND EXTENSION SCHOOL.** Instructor: Louis I. Kramer, 168 Gallatin St., Providence, R. I.

Stroudsburg, Pa. **KUSHNER ELECTROPLATING SCHOOL.** Instructor: Joseph B. Kushner, 115 Broad St., Stroudsburg, Pa.

MEETINGS

The **ANNUAL EDUCATIONAL SESSION AND BANQUET** of the **PHILADELPHIA BRANCH** of the **AMERICAN ELECTROPLATERS' SOCIETY** will be held on November 19 at the Benjamin Franklin Hotel in Philadelphia. The educational session will start at 2 p.m., and the banquet at 7 p.m.

HONORS

RICHARD L. TEMPLIN, assistant director of research for Aluminum Company of America, has been awarded an honorary membership in the American Society for Testing Materials at ceremonies in Atlantic City. This is the highest award the Society bestows.

Mr. Templin is well known throughout industry for his advanced methods of testing metal, especially aluminum, and for his expertness in the fields of metal inspection and quality control.

NECROLOGY

HAROLD EVERETT HALL of Short Hills, New Jersey, age 45, died July 8. He had been president of Metals Disintegrating Company, Inc., of Elizabeth, New Jersey, a subsidiary of American-Marietta Company. He served as president and director from 1943 until his death.

★ ★ ★

DR. WILLIAM J. HALE, 79, prominent scientist of the Dow Chemical Co., died August 8 in Midland, Michigan. Dr. Hale joined Dow in 1917, and was director of Organic Research from 1919 to 1934. He had been a research consultant for the company since 1934. Dr. Hale held many patents and was the author of several chemistry textbooks and other technical books.

★ ★ ★

FRANCIS JOSEPH STOKES, 81, industrialist and naturalist died August 1 in Germantown, Pa., after a brief illness.

After serving a year as an apprentice machinist to Robert Shoomaker, of Philadelphia, he purchased his employer's business and operated it from then on as the F. J. Stokes Machine Company. In 1896, Mr. Stokes developed the Eureka pharmaceutical tabletting press, the first successful commercial machine for tabletting drugs at high speed. From this foundation grew a machinery-building business that now includes not only automatic pharmaceutical machinery but also high-vacuum processing equipment, plastics molding machinery, and powder metal presses.

Mr. Stokes was president of the Stokes Company until 1948, when he became chairman of the board.

★ ★ ★

DAVID CRAMPTON, chief chemical engineer of Wallace & Tiernan, Inc., drowned August 28 at Mantoloking, N.J.

Mr. Crampton had been with Wallace & Tiernan for 24 years, having entered their Development Engineering Department in 1931, following his graduation from Cornell University.

meetings

OF INTEREST TO FINISHERS

Oct. 9-13. Fall Meeting, The Electrochemical Society, William Penn Hotel, Pittsburgh, Pa.

Oct. 11-15. Aeronautic Meeting, Aircraft Production Forum and Aircraft Engineering Display, Society of Automotive Engineers, Los Angeles.

Oct. 17-21. National Metal Congress and Exposition, Exposition Hall, Philadelphia, Pa.

Oct. 31-Nov. 1. 11th Fall Meeting, The Magnesium Association, Hotel Biltmore, New York, N. Y.

Oct. 31-Nov. 2. 67th Annual Convention, National Paint, Varnish and Lacquer Association, Shoreham and Sheraton Park Hotels, Washington, D. C.

Nov. 9-11. The Nineteenth Annual Time and Motion Study and Management Clinic, Industrial Management Society, Sherman Hotel, Chicago, Ill.

Nov. 19. Annual Educational Session and Banquet, Philadelphia Branch, American Electroplaters' Society, Benjamin Franklin Hotel, Philadelphia, Pa.

Nov. 28-Dec. 1. 9th Exposition, Air Conditioning and Refrigeration Industry, Atlantic City, N. J.

Dec. 10-16. International Atomic Exposition, Cleveland Public Auditorium, Cleveland, Ohio.

Mar. 10, 1956. Tri-State Regional Meeting, American Electroplaters' Society, Biltmore Hotel, Dayton, Ohio.

Opportunity Section

FOR SALE

Ashdee Electrostatic Paint Spray Unit for sale, priced reasonably for quick disposal. Condition, slightly used. Reply Box 102, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

WANTED

Manufacturers Representatives wanted to sell well known line of electrostatic paint spray equipment. Should have experience and contacts to handle this type of equipment. Various territories available. Reply Box 103, c/o Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

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Excellent opportunity for man 30-40 years of age familiar with air dry and baked metal finishes. Supervisory and technical experience required. Plant located at Hamilton, Ohio. Send details and approximate salary expectations. Address Box No. 101, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

WANTED. Expanding mfgr. desires to purchase large capacity complete finishing setup, conveyorized or otherwise. Perfect opportunity for job shop or discontinued dept. to close out completely. Mr. Irving, Bernard Edward Co., 5252 S. Kolmar Ave., Chicago, Ill.

Generator: Hanson-Van Winkle, 5000 amps. at 9 volts, excellent condition, includes starter and panel. $3500.

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Vapor Plating—By C. F. Powell, I. E. Campbell, and B. W. Gonser. 158 pages. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Price, $5.50.

A critical review of the applications and techniques of vapor deposition of metals and non-metals. The work provides a complete description of present and past applications of these techniques, many of which are not widely known, although they have been employed in various ways for several years. Older data are evaluated in the light of the authors' extensive experience with these processes. In addition to a summary of the properties of many of the resulting coatings and materials, new applications of the vapor plating processes are suggested.

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PRODUCT LITERATURE

59. Non-Fray Buffs

A bulletin featuring non-fray contact and polishing wheels, conventional buffs, and miscellaneous non-fray buffs may be obtained from F. L. & J. C. Codman Co., Rockland, Mass.

60. High Lustre Burnishing Compound

Suggestions for the proper application of Esbec No. 205, a Color Identified (orange) Barrel Finishing Compound for high lustre burnishing of all types of zinc die castings in chips or steel media are contained in a data sheet being issued by Tumbling Sales & Service Co., 18 Beech St., Byram, Conn. The liquid burnishing compound is designed to produce natural color and high lustre on zinc die castings, and is said to produce an improvement in color with increased burnishing time.

61. Maintenance Spray Painting

Maintenance painters can find the answers about the proper equipment for specific spray painting jobs in an equipment guide published by the DeVilbiss Company, 300 Phillips Ave., Toledo 1, Ohio. The catalog covers complete spray painting outfits, the individual components, and guides which show the correct gun and nozzle combinations to use with all types of commercial materials.

62. Germanium Rectifiers

Full information on Rapid Germanium Rectifiers is contained in a bulletin which may be obtained from the Rapid Electric Co., 2877 Middletown Rd., Bronx 61, N. Y.

63. Aluminum Processing Chemicals

Pennsylvania Salt Mfg. Co., 3 Penn Center Plaza, Philadelphia 2, Pa., has available a folder presenting a complete line of aluminum processing chemicals. Included in this line are emulsion cleaners, inhibited alkaline cleaners, deoxidizing cleaners, an aluminum etchant, and deoxidizing and desmutting agents.

64. Do-It-Yourself Ovens

Literature available from the DriQuick Div., Dry Clime Lamp Corp., Greensburg, Ind., gives information on interlocking infra-red sections, which can be used in constructing ovens and heating units.

65. Air Sanders

Detailed information on the installation, operation, and lubrication of air-powered sanders is given in a folder which may be obtained from National Air Sander, Inc., Rockford, Ill. Specifications and available accessories are shown for several models of air sanders.

66. Water and Waste Treatment Equipment

Bulletin WC-117, covering industrial waste treatment equipment is available from Graver Water Conditioning Co., 216 W. 14th St., New York 11, N. Y.

67. Metal Preparation Machinery

The full Metalwash line is presented in a catalog available from Metalwash Machinery Corp., 915 North Ave., Elizabeth 4, N. J. Sections cover machinery for washing, pickling, drying, phosphatizing and degreasing.

68. Contour Sander

Details regarding the Sand-O-Flex Contour Sander are given in a bulletin available from Merit Products, Inc., 4023 Irving Place, Culver City, Calif. The Sand-O-Flex feeds fresh abrasive as needed by turning an indexing knob.

69. Self-Spraying Paint

"Answers to Your Questions," is the title of the leaflet being distributed by Sprayon Products, Inc., 2075 E. 65th St., Cleveland 3, Ohio. This booklet contains complete information on self-spraying aerosol paint plus many tips on getting the most out of push-button painting.

70. Power Driven Brushes

Details on the complete line of Pittsburgh Power Driven Brushes is given in Catalog No. 54-W, available from the Pittsburgh Plate Glass Co., Brush Div., Dept. V-9, 3221 Frederick Ave., Baltimore 29, Maryland.

71. Plating With Demineralized Water

Catalog No. 123, which may be obtained from the Barnstead Still & Sterilizer Co., 12 Lanesville Terrace, Forest Hills, Boston 31, Mass., describes equipment for the production of distilled or demineralized water.

72. Black Oxide Finish

The Park 290 Process for applying a rust resistant or decorative finish is described in Bulletin H-16, available from the Park Chemical Co., 8078 Military Ave., Detroit 4, Mich.

73. Buffing Compound Pumps

A pump specifically designed for moving buffing compounds when automatic spray methods for buffing compound application are used is described in Bulletin 703, obtainable from the Binks Mfg. Co., 3118-40 Carroll Ave., Chicago 12, Ill.

74. Degreasing Solvent

Octagon Process, Inc., 15 Bank St., Staten Island 1, N. Y., has available Fact Sheet No. 2, which describes the advantages of using Klearall 95 Cold Degreasing Solvent.

75. Buffer and Polishers

Catalog 72-PV, available from the Hisey-Wolf Machine Co., Madison & Edwards Rd., Cincinnati 8, Ohio, gives information on performance features of 63 standard types of buffers and polishers.

76. SlideHoning

A brochure available from the BMT Manufacturing Corp., 103 E. 9th St., Elmira Heights, N. Y., is entitled "Modern Precision Tumbling." It contains information on a barrel finishing unit with a wide range of barrels mounted on a revolving disc, and discusses advantages of the "SlideHoning" process.

77. Polishing Wheel

Desirable features of the Kon-Toor Wheel designed for polishing complex contours are described and illustrated in a folder which may be obtained from the Behr-Manning Division of Norton Co., Troy, N. Y.

78. Heat-Resistant Finish

Details on Sicon Heat Resistant Finishes are available from Midland Industrial Finishes Co., Waukegan, Ill.

79. Safety Cleaner

A data sheet can be obtained from Macco Products Co., 9210 S. Sangamon St., Chicago 20, Ill., which describes Macco No. 400-K safety cleaner. This cleaner, made to eliminate fire hazards, can be used for a variety of cleaning operations.

80. Lea Lectromag

The Lea Mfg. Co., 16 Cherry Ave., Waterbury 20, Conn., has available a bulletin describing the Lea Lectromag, an electrical instrument for measuring the thickness of any non-magnetic coating on carbon steel or iron.

81. Filter Aids

"Get Perfect Water Clarity with Celite Filtration" is the title of a brochure available from Johns-Manville, 22 East 40th St., New York 16, N. Y. It covers filtration of potable water, process water and plant wastes. The brochure explains how Celite diatomite filter aids remove colloids and other suspended impurities.

82. Finishing Die Castings

Technical Bulletin PP-125, available from Frederic B. Stevens, Inc., Detroit 16, Mich., describes finishing recommendations made by the Stevens Customer Service Laboratory for many aluminum and zinc base die cast items.

The recommendations include type and size of buff or wheel, minimum number of operations required, wheel speed, and necessary abrasives or compositions.

83. Spray Booths and Ovens

Young & Bertke Co., 2291 Buck St., Cincinnati 14, Ohio, has issued a bulletin which gives full details of the many services offered by the company, together with data concerning dust and fume control, industrial ovens and spray booths, and other equipment manufactured by the company.

84. Plating Solution Filters

Horizontal plate filters for bright nickel, gray nickel, and cyanide solutions are featured in a bulletin available from Sparkler Mfg. Co., Mundelein, Ill.

85. Lacquer Thinners

A folder describing advantages of six different types of lacquer thinners may be obtained from Barrett Varnish Co., 1532 S. 50th Ct., Cicero 50, Ill.

86. Diamond Chemicals

"Your Handy Checklist of Helpful Diamond Literature," is the title of a brochure available from Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio. This compilation of technical and non-technical information has been prepared as a guide to available literature covering Diamond chemicals and their uses.

87. Engineered Conveyor System

Alvey Conveyor Mfg. Co., 9309 Olive St. Rd., St. Louis 24, Mo., has available a bulletin featuring the Alvey-engineered conveyor system. Illustrations and complete details are presented in this booklet.

88. Precision Barrel Finishing Equipment

Advantages of the Futurama Series of barrel finishing equipment are given in a catalog which may be obtained from the Speed-D-Burr Corp., 3613-C San Fernando Rd., Glendale 4, Calif.

89. Testing Service

South Florida Test Service, 4201 N. W. 7th St., Miami 34, Florida, has available a booklet entitled, "Tomorrow's Products Tested Today," which describes the way in which the company's engineering, inspection, research, and testing facilities are being applied to the solution of problems involving surface coatings.

90. Air Compressors and Spray Guns

Bell & Gossett Co., Morton Grove, Ill., has available a bulletin with complete descriptions and illustrations of the B & G Oil-less air compressors and spray guns. Features of construction and specifications are presented.

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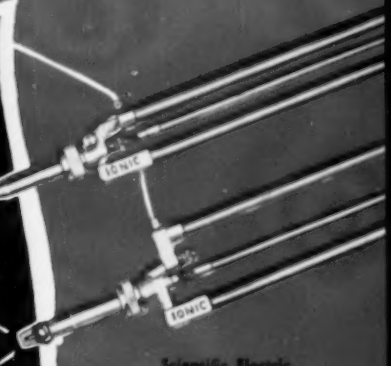

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